RUN

THE COMMODORE 64/128 USER'S GUIDE

June 1988
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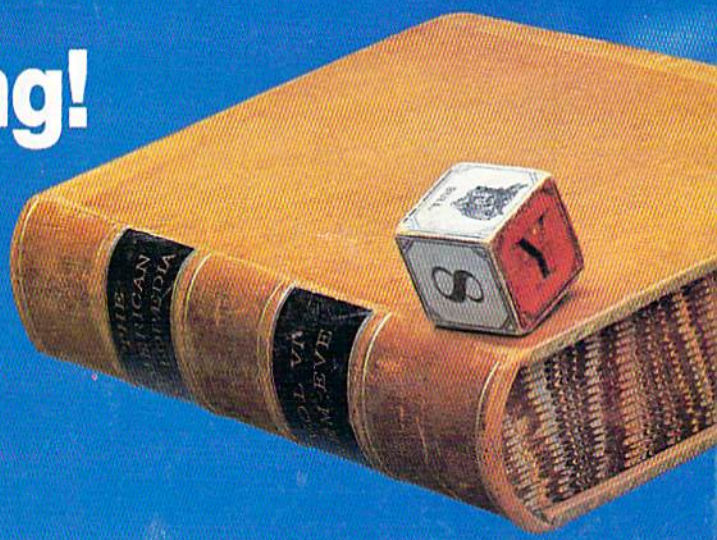

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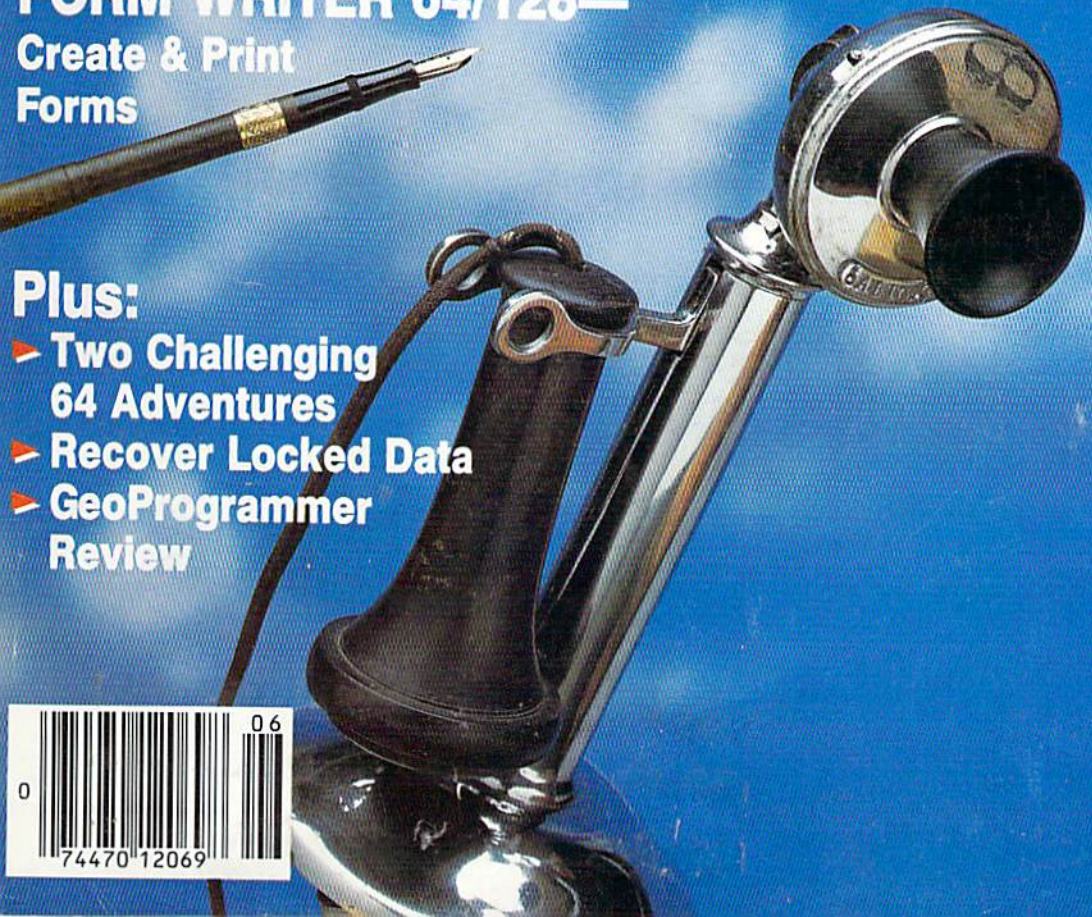

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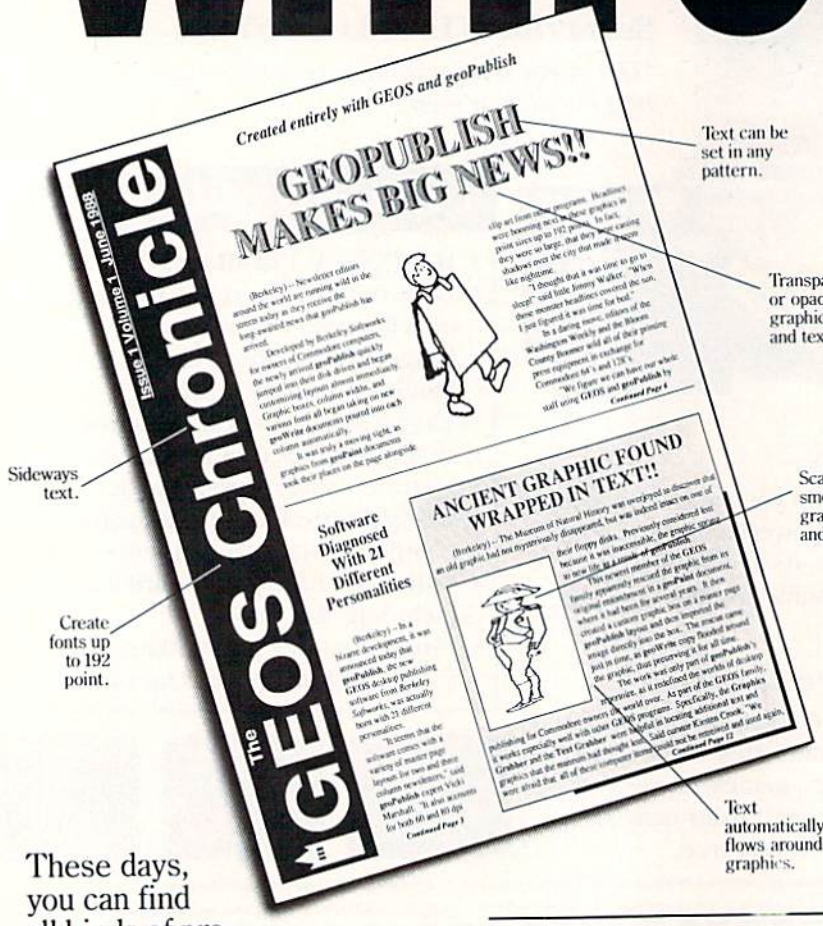
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Issue 1/Volume 1, June 1988
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You see, geoPublish is a real desktop publisher. With hundreds more features that unleash your layouts across an endless number of pages, and leave your non-GEOS friends frenzied with frustration.

"Full featured desktop publishing on the Commodore 64? Including laser printing? If I hadn't seen it with my own eyes on my own Commodore 64, I wouldn't have believed it, either."

—MicroTimes, March, 1988

With geoPublish, you pour your geoWrite text into columns and around graphics. Automatically. You can use any of the 21 preset page layouts or any of the zillions you come up with yourself.

After that, it's off to fun city.

The geoPublish toolbox is filled with goodies that help you create all kinds of special effects in almost every area. for example, you can customize over 80 GEOS compatible fonts. In bold, italic, underline, or outline. In any combination you choose. Up to 192 points high.

"Of the three software packages I used (geoPublish, Personal Newsletter, Outrageous Pages), geoPublish most resembles professional desktop publishing programs."

—RUN, March 1988

And that's just what you can do with type. You can also create columns. Boxes. Banners. Enlarge or reduce graphics. Zoom in for detail work. Preview the entire page. And print the whole thing out on a LaserPrinter for a razor sharp look.

Of course, those aren't the only reasons we're excited about geoPublish. It's also because major magazines—like the tough guys at INFO

D EVERYONE ATURE STORY.

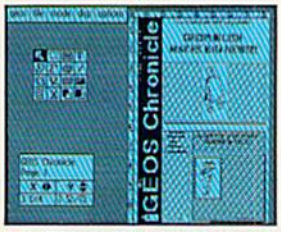
—are raving about it, too. Saying that people will use geoPublish *"to retire their Print Shops and Print Masters"* and that *"Newsroom pales in comparison."*

geoPublish Features

General

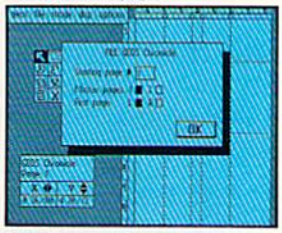
- WYSIWYG, What-You-See-Is-What-You-Get.
- Import graphics from geoPaint.
- Import graphics from Print Shop, Newsroom, Print Master™ using GEOS Graphics Grabber (sold separately with Deskpack Plus).
- Full page and zoom display modes.
- On-screen rulers, digital cursor control allows exact placement in full page edit modes.

Work in full page preview mode

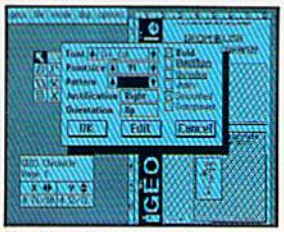


Zoom into actual size

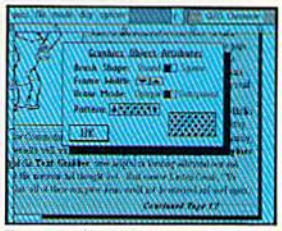
Create master pages



Flow text into columns



Headlines in 4 to 192 points



Easy graphic object manipulation

Hey, with press like that what more need we say?

Well, we can say we've got even more features. In fact, a whole What-You-See-Is-What-You-Get wish list in the chart to your right, filled with features that mean business. Things like text in any pattern and automatic font smoothing and stuff that nobody else ever thinks of.

So if you're serious about desktop publishing, take a look at geoPublish. For Commodore owners, it's the only feature story worth taking seriously.

- Supports over 80 GEOS compatible fonts in point sizes ranging from 4 to 192 point (.05" to 2.6").
- Plain, bold, underline, outline, italic, superscript and subscript, and any combination of these typestyles allowed for each font.
- Supports dot matrix and Post Script laser printers.
- Supports up to 16 pages in length, larger documents can be created by setting the starting page number.

Master Page Mode

- Support for left and right master pages.
- Set up to 16 guidelines for aiding graphic and column layout.
- Automatic page numbering can set starting page.
- Automatic date stamping.
- Full graphic tool box for master page graphic design.
- Library feature for saving master page layouts, product comes with a master page library with several standard layouts.

Page Layout Mode

- Imports text from any Commodore word processor.
- Flexible design and placement of text columns, column layout, size and combinations can be altered at any time.
- Built-in editor supports full word processing features of geoWrite 2.1 for text flowed into geoPublish columns.
- Snap to guides feature allows for easy layout using master page guidelines.
- User-selectable gutters (space between columns).
- Support for unanchored (flow with text) as well as anchored (text flows around) graphics.
- Automatically flows text around graphics and from page to page keeping track of up to 16 separate word processing documents.

Page Graphic Mode

- Contains a complete object oriented draw program. Graphic tools include:
- Place picture: Picture can be centered and clipped, scaled to any size, stretched and scaled.
- Special text: Any font may be output in any point size from 4 to 192 point. Text may also be printed in any style and in any of the 32 GEOS system patterns. Text may be printed either horizontally or vertically.
- Lines, connected lines and curved lines (splines): may be drawn in 8 different thicknesses, have round or square endpoints, and be drawn in 32 different patterns.
- Rectangles, polygons, circles, and ellipses: may be framed or unframed and filled with any of the 32 system patterns. Frame thickness can also be varied.
- Any graphic object or group of objects may be selected at any time and moved, cut, resized, brought to the foreground (drawn on top of everything) or pushed to the background (drawn under everything).
- Automatic smoothing option for pictures and text.
- All tools work in either full page preview mode or zoom mode.

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VOLUME 5, NUMBER 6

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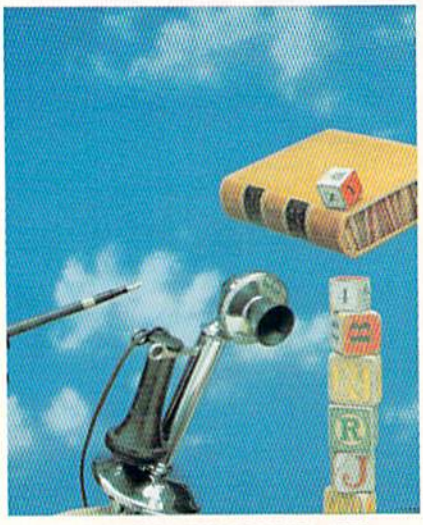

COVER PHOTOGRAPHED BY PAUL AVIS
STYLIST JANE SUTTON

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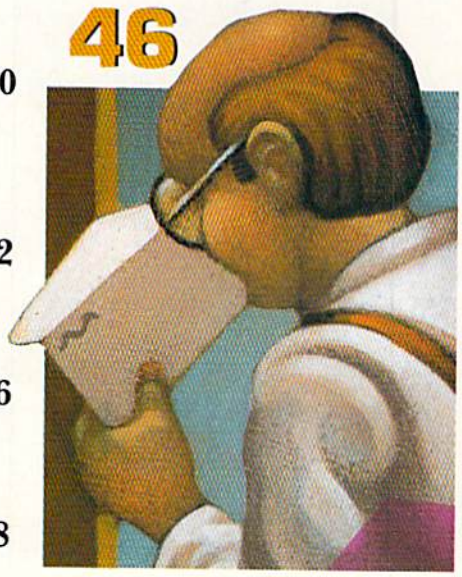

RUN (ISSN 0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. Phone 603-924-9471. Second-class postage is paid at Peterborough, NH, and at additional mailing offices. Canadian second-class mail registration number is 9565. Subscription rates in U.S. are $19.97 for one year, $29.97 for two years and $41.97 for three years. In Canada, a one-year subscription is $39.97 in Canadian funds. In Mexico, the one-year subscription rate is $24.97, with U.S. funds drawn on a U.S. bank. Foreign subscriptions are $39.97 for one year, with U.S. funds drawn on a U.S. bank. Please inquire about foreign air mail subscription rates. *RUN* is nationally distributed by International Circulation Distributors. **Postmaster:** Send address changes to *RUN*, Subscription Services, PO Box 954, Farmingdale, NY 11737. (Send Canadian changes of address to *RUN*, PO Box 1051, Fort Erie, Ontario, Canada L2A 5N8.)

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RUNning Ruminations

Here's your opportunity to help us choose the top software products in the Commodore market.

Get Out and Vote!

In this election year, we felt it only appropriate that *RUN* readers get a chance to vote too. So, in this issue, we present an opportunity for you to cast your ballot at the computing polls for the best software candidates in the marketplace.

What's your favorite Commodore game of all time? What's the most useful program you've ever used? What educational program is tops for your kids?

Given the vast library of Commodore software, these are tough questions. So we're asking *RUN* readers to indicate their personal favorites in *RUN*'s reader choice awards.

Here's your chance to choose the top software products in four major categories—entertainment, productivity, education and utility. Select those products that represent a high quality of performance and value in the Commodore market.

By virtue of their reviews, magazines usually have the *first* say about the performance of a product. But it is you, the reader, who ultimately makes or breaks a product—with your support or lack of support for it. This is your opportunity to tell us what products you think are tops.

You'll notice that the ballot on page 24 includes both 64 and 128 products together. So, for example, Vizawrite 128 competes against The Write Stuff for the 64. Regardless of which system you use, your choice for best word processor can be either a 64 or 128 program.

About the Ballot

Of necessity, selecting the nominees listed on the ballot was neither easy nor democratic. We cut through the caucuses and primaries and went straight to the convention with our choices.

Over the last year, literally thousands of computer programs have been released for the 64 and 128, and, obviously, no one can keep up with all of them. *RUN* editors sifted through hundreds of releases and reviews, and we relied heavily on our own familiarity with the products.

The selection process was partly personal—how do we, and our computer friends and associates, feel about this program—and partly scientific—what kind of reaction has this program received from reviewers and the consumer public?

RUN editors listed those products that we thought were significant in their category. We tried to keep the list as current as possible, restricting it to products released within the last year. However, we soon realized that this was impossible, since there are many "classics" that warrant consideration. For example, several new flight and naval simulations have surfaced during the recent year. We've included these, as well as the tried-and-true classics for this genre that computerists have used for years.

There were many products—considered outstanding at the time of their release—that have since become outdated and were thus not included. There may also be some products that have recently hit the market after this list was compiled.

We've anticipated that, in some cases, you won't agree with our choices.

If you don't see your favorite listed, write in the choice you feel would be most appropriate. These awards are an attempt to recognize those products that represent a high quality of performance and ease of use in the Commodore market.

Rules

The rules of the voting are simple. Go through the list of products and vote (by placing a check mark in the appropriate box in each category, or writing in your choice on the line provided) for those products that you feel are tops in their category. Fill out the ballot, including your name and address and whether you are a *RUN* subscriber, tear out the page from the magazine and send it in.

Vote for only one product per category. It doesn't necessarily have to be software you own or use every day. This is not a survey of reader ownership. You can vote for a product simply on the basis of having seen it demonstrated on a friend's computer system or at a user group meeting.

Other rules to follow:

—write-in votes should be for only commercially available products.

—please enter the contest only once; we don't want any ballot-stuffing.

—no photocopies of the ballot will be accepted; we will tabulate only originals from the magazine.

—include your name and address on the ballot.

—indicate whether or not you subscribe to *RUN* magazine.

—send in your ballot by July 15, 1988.

—send your ballots to:

RUN Software Contest
80 Elm St.
Peterborough, NH 03458

We hope that readers will take the time to participate in this voting process. Results of the contest and an analysis of the voting will be published in the December issue of *RUN*. Please don't call with queries before then.

As always, we welcome your suggestions for improving this process.

Mickey Mouse Computing

Walt Disney World in Florida appears to be a popular attraction for home computerists.

According to a recent poll of visitors to the Epcot Center, nearly one-third have a home computer. Midwesterners, with 32%, boast the largest percentage of computer ownership, followed by southerners, northeasterners and westerners.

And what kinds of computers are these Mouseketeers using? According to the survey of 1,844 U.S. adults conducted Jan. 20–Feb. 2, 1988, 28 percent of those with home computers are using MS-DOS machines, while 21 percent of that group of users said that they were Commodore owners.

With the popularity of IBM PC or PC clone machines among Walt Disney World visitors, perhaps they should change the name of the operating system from MS-DOS to mouse-DOS.

—Dennis Brisson
Editor-in-Chief

WHAT'S A TAITO?..

That's a very good question. Taito® (pronounced Tie-toe) is one of the oldest and biggest names in the arcade industry.

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Our strength comes from the massive development effort we put into creating the kind of games that satisfy the ever-growing arcade appetite and the research gathered from the more than 100,000 arcade machines Taito operates in Japan. (The money in the coin boxes at the end of the day tells very quickly if you've got a good game or not.) And Taito is always working hard to develop the most exciting new video

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When you buy Taito games, you're getting more than just fun. We bring you games that test your nerve and your strategy. Games that make you laugh and put you on the edge of your seat, games of adventure and excitement. Taito takes you on voyages to places you've never been before—to brave new worlds of imagination and fantasy. After all, isn't that what great video games are all about?

And every action game we put our name on is more than just competitive confrontation. Taito games are all about the values of good triumphing over evil, of being the best you can be—games like Arkanoid,™ Renegade,™ Alcon,™ Rastan,™ and Bubble Bobble.™ And we have more arcade block-busters like Operation Wolf,™ Sky Shark,™ and Gladiator,™ coming soon to software formats for play on your home computer. Taito's home-bound hit parade of video fun has just begun.

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MAGIC

Magic readers improve some previously published programs and offer indented loops and numeric-expression input.

Compiled by TIM WALSH

$4A0 C-64 Character Mischief

Fancy screen effects are nothing new on the C-64; programmers have been performing them for years. Here's a new one that could be called bizarre, unique, odd, unusual. . .well, let's just say it defies description. Letter characters will perform this scrolling effect, and you can change the speed by entering POKE 49273, followed by a comma, and then any number from 1 to 255, with 1 being fastest.

Type it in, give it a try, and you're certain to agree that there is nothing like it. Since the routine can be repeatedly activated with SYS 49152, you can easily incorporate it into menus, text adventures and games. Think of the possibilities!

```
Ø REM MAGICAL CHARACTER SCROLL - JEFF MART
  IN                                    :REM*29
1Ø FOR I=49152 TO 49285:READD:POKE I,D:CK=
  CK+D:NEXT                            :REM*162
2Ø IF CK<>18682 THEN PRINT"ERROR IN DATA..
  .":END                                :REM*62
3Ø FORC=1TO24:FOR S= 65 TO 9Ø:PRINT CHR$(S
  );:NEXT:NEXT                         :REM*234
4Ø PRINT:PRINT"{CTRL 2}{2 CRSR DNs}PRESS A
   KEY FOR MAGICAL SCROLL{COMD 7}"
                                        :REM*237
5Ø GETA$:IF A$="" THEN 5Ø               :REM*13 ►
```

TRICK OF THE MONTH

$4A1 Automatically Indenting For-Next Loops

Structured programming always stresses the importance of indenting For-Next loops so that a programmer can find them quickly in a listing. Placing a colon before the statement(s) within a For-Next loop is the only way the C-64's interpreter will accept indentations. Here's an example of an indented loop:

```
10 FOR T=1 TO 10
20 :      PRINT T
30 NEXT
```

While this method improves program clarity, it also quickly devours precious memory. To eliminate this problem, I wrote the 64 For-Next Indent program. After typing in and running this utility, program lines containing For-Next statements will automatically indent without losing any valuable memory when you list a program to the screen.

For a demonstration of how this program works, run Listing 1 and type in and list Listing 2 to the screen. Always bear in mind that in order for this program to work properly, your listings must adhere to one basic rule: The For and Next statements must be the only statements in a line. For added versatility, the program is designed so that pressing run-stop/restore won't deactivate the routine.

```
Ø REM FOR/NEXT LOOP INDENTER - SCOTT WEISG
  ARBER                                 :REM*99
1Ø FORT= 828 TO 958                    :REM*212
2Ø READ A                               :REM*28
3Ø POKE T,A                            :REM*231
4Ø X=X+A                               :REM*223
5Ø NEXT                                :REM*18Ø
6Ø IF X<>19344 THENPRINT"ERROR IN DATA...
  ":END                                :REM*211
7Ø POKE 1Ø2Ø,Ø:SYS936:SYS828:POKE 42731,1
  37:POKE 42732,3                       :REM*87
8Ø DATA 169,75,141,6,3,169,3,141,7,3,169,
  Ø,133,251,96,8,133,252,132,253:REM*175
9Ø DATA 134,254,173,141,2,2Ø8,251,165,252
  ,2Ø1,129,2Ø8,9,238,252,3,238    :REM*25
1ØØ DATA 252,3,76,123,3,2Ø1,13Ø,2Ø8,17,16
  9,2Ø,32,21Ø,255,32,21Ø,255      :REM*87
11Ø DATA 173,252,3,56,233,2,141,252,3,169
  ,54,133,1,166,254,164,253,4Ø :REM*159
12Ø DATA 165,252,76,26,167,32,2Ø5,189,8,1
  33,252,134,253,132,254,169,32 :REM*84
13Ø DATA 172,252,3,24Ø,6,32,21Ø,255,136,2
  Ø8,25Ø,4Ø,164,254,166,253,165 :REM*17
14Ø DATA 252,96,162,32,169,16Ø,16Ø,Ø,133,
  252,132,251,177,251,145,251   :REM*114
15Ø DATA 2ØØ,2Ø8,249,23Ø,252,2Ø2,2Ø8,244,
  96                                    :REM*62
```

```
Ø REM SAMPLE FOR/NEXT TEST - SCOTT WEISGA
  RBER                                  :REM*193
1Ø FOR T= 1 TO 5                        :REM*119
2Ø FOR Y= 5 TO 1 STEP -1                 :REM*47
3Ø PRINT Y,T                             :REM*62
4Ø PRINT T,Y                             :REM*82
5Ø NEXTY                                :REM*1Ø3
6Ø NEXT T                               :REM*1Ø3
```

—Scott Weisgarber, Monroeville, NJ

C-128 NEWS
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```
6Ø SYS 49152:GOTO 3Ø                    :REM*97
7Ø DATA 169,48,133,52,133,56,173,14,22Ø,41
   ,254,141,14,22Ø,165,1,41,251         :REM*177
8Ø DATA 133,1,169,Ø,133,252,133,254,169,2Ø
   8,133,255,169,48,133,253,16Ø,Ø       :REM*7Ø
9Ø DATA 177,254,145,252,23Ø,254,2Ø8,2,23Ø,
   255,23Ø,252,2Ø8,2,23Ø,253,165        :REM*1Ø5
1ØØ DATA 253,2Ø1,5Ø,2Ø8,234,165,1,9,4,133,
    1,173,14,22Ø,9,1,141,14,22Ø         :REM*2Ø7
11Ø DATA 173,24,2Ø8,41,24Ø,24,1Ø5,12,141,2
    4,2Ø8,169,48,133,253,162,Ø,16Ø      :REM*58
12Ø DATA 216,177,252,72,136,177,252,2ØØ,14
    5,252,136,192,8,2Ø8,245,1Ø4         :REM*91
13Ø DATA 145,252,232,238,6Ø,3,2Ø8,3,238,61
    ,3,173,61,3,2Ø1,5,2Ø8,241,169       :REM*224
14Ø DATA Ø,141,61,3,224,2Ø9,2Ø8,212,96
                                        :REM*88
```

—JEFF MARTIN, ROSEVILLE, CA

$4A2 UPDATE FOR 64 DOS SHELL

64 DOS Shell by John Ryan (November 1987) is a versatile disk utility and programming aid for the C-64 that matches the usefulness of Commodore's 1571 DOS Shell for the C-128. Yet, every program has room for improvement.

Place my 64 DOS Shell Boot on a disk containing 64 DOS Shell and run it. It will automatically load, protect and initialize 64 DOS Shell. All you have to do is press the restore key to activate the program.

```
Ø REM 64 DOS SHELL BOOT - MARK WOLTER
                                        :REM*169
1Ø PRINT CHR$(142):PRINT "BOOTING 64 DOS S
   HELL..."                             :REM*1Ø2
2Ø SYS 57812 "ML DOS SHELL",8,1:POKE78Ø,Ø:
   SYS65493                             :REM*17
3Ø POKE 51,44:POKE 52,135:POKE 55,44:POKE
   56,135:CLR                           :REM*73
4Ø SYS 345ØØ:REM INITIALIZE             :REM*183
5Ø PRINT CHR$(147)"DOS SHELL INSTALLED"
                                        :REM*196
6Ø PRINT"TO ACTIVATE, PRESS {CTRL 9}RESTOR
   E{CTRL Ø} KEY":NEW                   :REM*145
```

—MARK A. WOLTER, BRAUNSCHWEIG, WEST GERMANY

$4A3 HIDE YOUR 64 LISTINGS AWAY

Newcomers to Commodore computing eventually encounter a lengthy program that reveals only a single line of code, such as 10 SYS 2068, when they attempt to list it to the screen.

Since such coding represents an excellent way to hide program listings from prying eyes, I've engineered an easy-to-use method of converting Basic programs to a similar format.

First, type in the listing below and save it to disk. Next, enter these commands in C-64 Direct mode:

```
POKE43,1:POKE44,8:POKE8192,0:POKE8193,0:NEW
```

Now load my program and run it. Don't worry if a syntax error appears. After the Ready prompt appears, enter these Pokes:

```
POKE43,1:POKE44,8
```

Now list the program to the screen, and run it again. Finally, list the program again and heed the message that appears at the beginning of the new listing. Now load in any Basic program, and add a line 0. Since the name of the game here is program security, line 0 might consist of:

```
0 POKE 808,239:POKE 792,193
```

which disables the C-64's run-stop/restore keys. Now enter the following two Pokes in Direct mode:

```
POKE 43,1:POKE 44,8
```

You're ready to save your program to disk. On all future loads, listing that file to the screen will produce a line number followed by a SYS command.

```
Ø REM 64 HIDDEN BASIC LISTINGS - STEPHEN C
  HEUNG                                 :REM*135
1Ø FOR T= 2Ø49 TO 2139:READ D:CK=CK+D:POKE
   T,D:NEXT                             :REM*153
2Ø IF CK<> 5799 THEN PRINT"ERROR IN DATA S
   TATEMENTS...":END                    :REM*33
3Ø DATA 11,8,196,7,158,5Ø,48,54,49,Ø,Ø,Ø,1
   69,3Ø,133,43,76,113,168,78,65        :REM*177
4Ø DATA 82,68,73,78,65,32,211,Ø,6Ø,8,Ø,Ø,1
   28,58,143,69,77,66,69,82,32,84       :REM*43
5Ø DATA 79,32,77,65,75,69,32,65,32,76,73,7
   8,69,32,48,Ø,9Ø,8,1Ø,Ø,151,32        :REM*68
6Ø DATA 51,44,49,32,175,32,167,32,148,32,8
   9,79,85,82,32,8Ø,82,79               :REM*9Ø
7Ø DATA 71,82,65,77,Ø,Ø,Ø               :REM*196
```

—STEPHEN CHEUNG, DEER PARK, NY

$4A4 SATELLITE TRACKERS: YOUR DATE HAS ARRIVED

Most segments of government and communications rely on the Greenwich time coupled with the Julian date calendar to reduce confusion caused by time zones. The Julian date consists of the last two digits of the year followed by the day of the year, with January 1, 1988 being 88001, January 2 being 88002, and so on.

A group of *RUN* readers in Florida who track satellites and read NASA-prediction bulletins requested that I modify Calendar Maker (see Easy Applications, January 1988) to automatically print the last three digits of the Julian date (001, 002, etc.) as the last memo of each day. Satellite trackers everywhere can add the following lines to their Calendar Maker listing. Happy tracking!

```
Ø REM CALENDAR MAKER UPDATE (DAY OF YEAR)
  LINES 445-658 - BOB KODADEK           :REM*235
445 GOSUB 654                           :REM*33
651 IF (YR/4)-INT(YR/4)=Ø THEN ND(2)=29
                                        :REM*74
652 RETURN                              :REM*25
653 :                                   :REM*197
654 PRINT"PLEASE WAIT...":PRINT         :REM*17Ø
655 DZ=Ø:FOR I=Ø TO 11:DZ=DZ+ND(I):DA(I)=D
    Z:NEXT                              :REM*8Ø
656 FOR I=1 TO ND(MO):XM$(I+J,5)=STR$(DA(M
    O-1)+I)                             :REM*12Ø
657 IF LEN(XM$(I+J,5))<1Ø THEN XM$(I+J,5)=
```

```
    XM$(I+J,5)+CHR$(32):GOTO 657    :REM*42
658 NEXT                            :REM*23
```

—BOB KODADEK, ASTON, PA

$4A5 C-64 NUMERIC-EXPRESSION INPUT

Every C-64 programmer occasionally has had need for a numeric-expression Input routine in their programs. But just what, you might ask, is a numeric-expression Input routine? Simple: It is a routine that allows Input statements to accept and calculate equations such as 3*4+2,(8/2) and any other valid expression.

You don't have to be a programmer, though, to appreciate the benefits of a numeric-expression Input routine. Let's suppose you need to input the total cost of thirteen widgets at $45.66 each, factor in seven percent sales tax, and you don't have a calculator handy. Entering the following equation into a numeric-expression Input routine would instantly calculate your answer:

1.07(13*45.66)

To use this routine in your own programs, include lines 60000 to 60030 and GOSUB 60000. The input value will be returned in the variable E.

```
Ø REM C-64 NUMERIC EXPRESSION INPUT - RICH
  ARD PENN                          :REM*54
1Ø PRINTCHR$(147)"PLEASE ENTER AN EXPRESSI
   ON";:GOSUB 6ØØØØ                 :REM*93
2Ø PRINT"THE VALUE YOU ENTERED IS";E
                                    :REM*222
3Ø END                              :REM*158
6ØØØØ INPUT E$                      :REM*48
6ØØ1Ø POKE 2,PEEK(646):POKE 646,PEEK(647):
      PRINT"E=";E$":GOTO6ØØ3Ø"      :REM*219
6ØØ2Ø POKE 631,145:POKE 632,145:POKE 633,1
      45:POKE 634,13:POKE 198,4:END
                                    :REM*151
6ØØ3Ø POKE 646,PEEK(2):PRINT"{CRSR UP}";:R
      ETURN                         :REM*187
```

—RICHARD PENN, MONTREAL, QUEBEC, CANADA ■

Magic is the original *column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for* RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:*

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RUN *pays $10 to $40 for each trick published in the column. A payment of $50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.*

If you'd like a copy of the latest edition of RUN*'s Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.*

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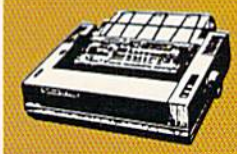

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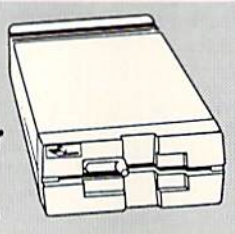

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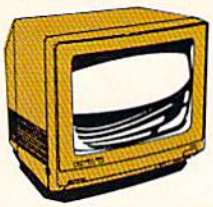

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News and New Products

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Compiled by HAROLD R. BJORNSEN

A Show of Hands

LAGRANGE, IL—Free Spirit Software (905 West Hillgrove Rd., Suite 6, LaGrange, IL 60525) has released two educational programs.

Easy Sign aids in the learning of sign language for the deaf. A phrase or sentence typed in is displayed on the monitor in hand signs. The student may practice the alphabet, words or sentences. This C-64 tutorial is available for $19.95.

The Number Show uses scenes and animation to introduce numbers to preschool and kindergarten children. The program's exercises drill in number skills and reinforce learning. You can see this C-128 show for $19.95.

Check Reader Service number 400.

Teach or Learn Accounting

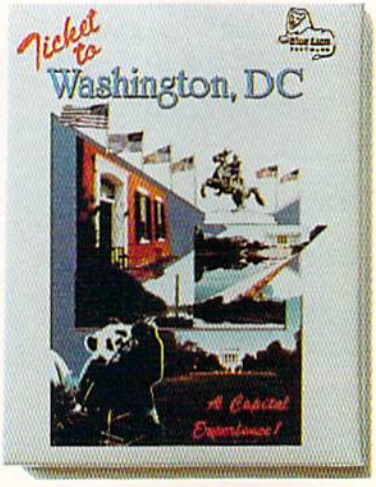
NEEDHAM, MA—Pro Tutor Accounting is a C-128 tutorial designed to help students, new employees and self-learners master basic accounting principles. It contains over 3000 questions in such areas as debits and credits, journalizing and balance sheets and simulates ledgers, T-accounts and other forms. It also keeps track of correct and incorrect answers, shows where mistakes were made and points out the student's strengths and weaknesses.

Two versions of Pro Tutor Accounting are available: the home and business version, for $99, and the educational version, which includes teacher utilities for tabulating test scores, for $249. Professional Software, Inc., 51 Fremont St., Needham, MA 02194.

Check Reader Service number 401.

A Capital Experience

CAMBRIDGE, MA—Ticket to Washington, DC, a C-64 travelogue from Blue Lion Software (90 Sherman St., Cambridge, MA 02140), takes you to more than 45 different places in and around our nation's capital, from museums and Capitol Hill to Georgetown's cobblestones and Mount Vernon. You can picnic on the Mall, take an excursion to Arlington national cemetery and visit the historic memorials.



There are more than 14 mysteries for you to solve in Blue Lion Software's Ticket to Washington, DC.

In addition to sightseeing, you're challenged to discover the identities of famous Americans from the past and present. Seven detailed 3-D maps and on-screen information are available to help you in your search. Buy a Ticket to Washington for $34.95.

Check Reader Service number 404.

Fore the Pros

MARATHON, NY—The Golf Package disk for the C-64 contains programs for every golfer, from the hacker to the serious statistician. Several of the programs keep records of scores and calculate handicaps for as many as 250 golfers. Included is the USGA system (U.S.), the RCGA system (Canada) and the SSS system (Great Britain, Ireland and Australia). The Callaway system and a nine-hole league handicapping system round out the programs for handicap calculation.

The individual golfer who wants to track his or her progress in several important areas of the game can select Golf Stats, which keeps records of putts, drives in fairway and sand saves, and then reports averages for the last 10, 30 and 100 rounds played. The package is available for $19.95 from McConnell Software, PO Box 652, Marathon, NY 13803.

Check Reader Service number 405.

Indoor Youth Soccer Tournament

CHICAGO—Mindscape, Inc., publisher of software for the Commodore computers, and the Chicago Sting cosponsored the first-ever national indoor youth soccer tournament back in late February. Dubbed the Mindscape Cup, the contest was a double-elimination contest between youth all-stars chosen by each Major Indoor Soccer League team. Competitors traveled from as far away as Baltimore, Dallas and San Diego.

Eleven teams, each made up of twelve boys under the age of 14, played in the preliminary round. The championship round pitted the Chicago Sting against the Cleveland Force, with the Sting prevailing. The championship was played at the Sting's home field, the Rosemont Horizon.

Mindscape President and CEO Roger Buoy presented the Mindscape Cup to the Chicago team. At a brunch honoring all participants, Buoy spoke about the bright future for youth soccer in America and reaffirmed his company's commitment to continuing the Mindscape Cup. "Mindscape is dedicated to supporting and promoting youth sports, and I'm a firm believer that soccer is an exceptional way to bring young people together."

Three From Scorpion

LAKE HOPATCONG, NJ—Scorpion (19 Harbor Drive, Lake Hopatcong, NJ 07849) has released three new C-64 products for $29.95 each.

Alien Destruction Set, an arcade game, challenges players with four space

adventures requiring varying skills, such as quick puzzle-solving logic and fast space-combat reflexes.

Mandroid, also an arcade game, contains two adventures. You control Mandroid, half man and half machine, in his mission to infiltrate an enemy complex and save seven astronauts or as he tries to stop an evil scientist from creating an army of deadly soldiers.

Masterpiece, a graphics package, lets you move, copy, scale, rotate, twist and fold onscreen artwork. Other features include picture compression to save memory and loading Masterpiece pictures from Basic.

Check Reader Service number 408.

Logo Probability

MALDEN, MA—Logo Probability, part of a continuing series of educational products from Terrapin (376 Washington St., Malden, MA 02148), gives math students the opportunity to try their own ideas, examine results, make predictions and test hypotheses as they explore counting techniques, sample sizes, dependent and independent events, combinations and permutations, fairness, graphing and estimation, and using the Logo language.

The package, for the C-64, is designed to accompany several popular middle school and high school mathematics texts, including series published by Macmillan, Houghton Mifflin and Merrill. It includes student booklets, a teacher's guide and a disk. Logo Probability is written for use with Terrapin Logo and sells for $23.95 with one student booklet, $34.95 with eight booklets and $59.95 with 25. Additional booklets are $17.95 (set of eight) and $49.95 (set of 25).

Check Reader Service number 409.

Stealth Mission

CHAMPAIGN, IL—SubLogic (713 Edgebrook Drive, Champaign, IL 61820) has released Stealth Mission, a flight simulator with eight different missions and ten skill levels. The program includes automatic landing and refueling systems and a real-time pause feature. You have a choice of three different jets to fly: the F-19 Stealth fighter, the experimental forward-swept-wing X-29 and the Navy F-14 Tomcat. The package is compatible with the company's scenery disks and provides complete VOR, ILS, ADF and DME avionics for cross-country navigation. Stealth Mission is available for the C-64 for $49.95.

Check Reader Service number 410.

Print a Coloring Book

PALATINE, IL—Coloring Book Page Maker, for the C-64, lets users of Broderbund Software's The Print Shop expand three-block, non-Commodore printer graphics files into full-screen-size Print Shop Screen Magic files. These files can then be printed with Print Shop's standard Screen Magic file-print utility to produce coloring book-like graphics for children to color in. Themes include holidays, sports and animals. Color this package inexpensive at $7.95, from MicroAds, 145 East Norman Drive, Palatine, IL 60067.

Check Reader Service number 402.

Rescue Your Spike-Haired Girlfriend

SAN JOSE, CA—Data East USA (470 Needles Drive, San Jose, CA 95112) has released Kid Niki for the C-64. Based on the coin-op version also developed by Data East, this one- or two-player ninja adventure game lets you become a radical fighter battling to save your spike-haired girlfriend. You must wield your sword to conquer dragons, evil monsters and ancient warriors at each of the seven levels, until finally rescuing the girl from the Stone Wizard. Your adventure will cost $29.95.

Check Reader Service number 403.

Dark Castle

CAMPBELL, CA—The C-64 version of Dark Castle, an arcade-action game, has been released by Three-Sixty (2105 S. Bascom Ave., Suite 290, Campbell, CA 95008). Set in medieval times, the game features a hero who must fight his way through 14 different rooms, warding off plague-infested rats, attacking bats and a fire-breathing dragon, among other dangers. Players control their hero with the keyboard or joystick, at one of three levels of difficulty. Enter the Castle for $34.95.

Check Reader Service number 406.

CALC Goes Online

RINDGE, NH—Margaret Morabito, former associate editor at *RUN* and promoter of educational uses of Commodore computers, has announced that her Computer-Assisted Learning Center (CALC) newsletter is now available online through QuantumLink's Learning Center, in the Parent-Teacher Information Exchange section. Q-Link members who subscribe can download the monthly newsletter and hundreds of public domain and shareware education programs for the C-64, C-128, VIC-20, PET, Amiga and PC-10 computers. The cost is $15 a year. For more information, contact CALC, PO Box 132, Rindge, NH 03461.

Check Reader Service number 411.

Calling All Software Publishers

COLUMBUS, OH—The CompuServe online information service (PO Box 20212, Columbus, OH 43220) is calling all software publishers to join Softex, the company's online delivery system for retailing commercial programs for personal computers.

"Softex offers publishers a way to market their products efficiently to a large, upscale, computer-literate audience," said David Paul, product marketing associate. "By choosing to market products in the Softex online catalog, publishers can reach CompuServe's more than 400,000 subscribers."

Products purchased through Softex are delivered electronically, then subscribers are billed for them by CompuServe. ■

RUN's Reader Choice Awards Ballot

Readers, here's your chance to vote for your favorite Commodore software products. This ballot includes the most popular software categories, and you should vote for the product you consider tops in quality and performance in each category. Just place a check mark in the appropriate box or write in your choice on the line provided. Note: This is not a reader ownership survey. You don't have to own a product to vote for it, but you should be familiar with what it does and how well it works.

The rules of the voting are as follows:

► Vote for only one product per category. ► Only original ballots, not photocopies, will be recognized. ► Only one ballot per reader.
► Votes should be cast only for commercially available software, not public domain programs.
► Send your ballot, before July 25, 1988, to: *RUN* Software Contest, 80 Elm St., Peterborough, NH 03458
► Results of the voting will be published in the December 1988 issue of *RUN*. Thank you for your participation.

Entertainment

Arcade Adventures

5-1☐ Airborne Ranger (MicroProse)
2☐ Alternate Reality series (Datasoft)
3☐ Cauldron (Broderbund)
4☐ Defender of the Crown (Cinemaware)
5☐ Elite (Firebird)
6☐ Frankie Goes to Hollywood (Firebird)
7☐ Infiltrator series (Mindscape)
8☐ Moebius (Origin)
6-1☐ Pirates! (MicroProse)
2☐ Robot Rascals (Electronic Arts)
3☐ The Last Ninja (Activision)
4☐ The Movie Monster Game (Datasoft)
5☐ The Three Stooges (Cinemaware)
6☐ The Train (Accolade)
7☐ Other _____

Arcade Games

7-1☐ Archon (Electronic Arts)
2☐ Beach Head (Access)
3☐ Boulder Dash series (Electronic Arts)
4☐ Dan Dare (Electronic Arts)
5☐ Delta Patrol (Electronic Arts)
6☐ Fairlight (Mindscape)
7☐ GeeBee Air Rally (Activision)
8☐ Into the Eagle's Nest (Mindscape)
9☐ Marble Madness (Electronic Arts)
0☐ Rad Warrior (Epyx)
x☐ Skyfox II (Electronic Arts)
y☐ Other _____

Graphics Adventures

8-1☐ Accolade's Comics
2☐ Guild of Thieves (Firebird)
3☐ Maniac Mansion (Activision)
4☐ The Pawn (Firebird)
5☐ Other _____

Role-Playing Adventures

9-1☐ Alter Ego (Activision)
2☐ Bard's Tale series (Electronic Arts)
3☐ Beyond Zork (Infocom)
4☐ Mind Mirror (Electronic Arts)
5☐ Phantasie series (SSI)
6☐ Ultima series (Origin)
7☐ Wizard's Crown (SSI)
8☐ Other _____

Simulations

10-1☐ Apollo 18 (Accolade)
2☐ Chuck Yeager's Advanced Flight Trainer (Electronic Arts)
3☐ Echelon (Access)
4☐ Flight Simulator II (SubLogic)
5☐ Gunship (MicroProse)
6☐ Jet (SubLogic)
7☐ Project: Stealth Fighter (MicroProse)
11-1☐ Silent Service (MicroProse)
2☐ Stealth Mission (SubLogic)
3☐ Super Huey II (Cosmi)
4☐ Test Drive (Accolade)
5☐ Thunderchopper (ActionSoft)
6☐ Up Periscope! (ActionSoft)
7☐ Other _____

Sports Games

12-1☐ California Games (Epyx)
2☐ Championship Baseball (Activision)
3☐ Football (Software Simulations)
4☐ Hardball! (Accolade)
5☐ Indoor Sports (Mindscape)
6☐ LeaderBoard series (Access)
7☐ MicroLeague Baseball (MicroLeague Sports Assn.)
8☐ Pure-Stat Baseball (Software Simulations)
9☐ Superstar Ice Hockey (Mindscape)
0☐ 4th & Inches (Accolade)
x☐ 10th Frame (Access)
y☐ Other _____

Strategy Games

13-1☐ Battlefront (Electronic Arts)
2☐ Gulf Strike (Avalon Hill)
3☐ President Elect (SSI)
4☐ Rebel Charge at Chickamauga (SSI)
5☐ Roadwar 2000 (SSI)
6☐ The Sentry (Firebird)
7☐ Tracker (Firebird)
8☐ Other _____

Text Adventures

14-1☐ A Mind Forever Voyaging (Infocom)
2☐ Bureaucracy (Infocom)
3☐ Hitchhiker's Guide to the Galaxy (Infocom)
4☐ Hollywood Hijinx (Infocom)
5☐ Leather Goddesses of Phobos (Infocom)
6☐ Nord and Bert Couldn't Make Head or Tail of It (Infocom)
7☐ Plundered Hearts (Infocom)
8☐ Seastalker (Infocom)
9☐ Wishbringer (Infocom)
0☐ Zork trilogy (Infocom)
x☐ Other _____

Education

15-1☐ Bank Street School Filer & Databases (Sunburst)
2☐ Carmen Sandiego series (Broderbund)
3☐ Cave of the Word Wizard (Timeworks)
4☐ Chem Lab (Simon & Schuster)
5☐ Ladders to Learning (McGraw-Hill)
6☐ MacBeth (Avalon Hill)
7☐ Speed Reader series (Davidson)
8☐ Stickybear series (Weekly Reader)
16-1☐ Success with Math series (CBS)
2☐ Talking Teacher (Firebird)
3☐ Teddy Bear.rels of Fun (DLM)
4☐ The Accelerated Reader (Readup)
5☐ The Perfect College/Score (Mindscape)
6☐ Typing Tutor IV (Simon & Schuster)
7☐ Whole Brain Spelling (SubLogic)
8☐ Other _____

Productivity

Telecommunications

17-1☐ Bobsterm Pro (Progressive Peripherals)
2☐ Prototerm (Briwall)
3☐ Speedterm (Abacus)
4☐ Other _____

Databases

18-1☐ Data Manager (Timeworks)
2☐ Filer's Choice (Activision)
3☐ Fleet Filer (PSI)
4☐ geoFile (Berkeley Softworks)
5☐ Pocket Filer 2 (Digital Solutions)
6☐ Superbase (Progressive Peripherals)
7☐ Other _____

Desktop/Tabletop Publishing

19-1☐ Color Mail (Hallmark)
2☐ Create with Garfield (DLM)
3☐ geoPublish (Berkeley Softworks)
4☐ Hi-Tech Expressions series
5☐ Newsroom (Springboard)
6☐ Outrageous Pages (Electronic Arts)
7☐ PaperClip Publisher (Electronic Arts)
8☐ Personal Newsletter (Softsync)
9☐ PrintMaster (Unison World)
0☐ The Print Shop (Broderbund)
x☐ Other _____

Graphics (Drawing)

20-1☐ The Advanced OCP Art Studio (Firebird)
2☐ CAD 3-D (IHT)
3☐ CAD PAK 128 (Abacus)
4☐ Color Me (Mindscape)
5☐ Doodle! (City Software)
6☐ Flexidraw (Inkwell)
7☐ Home Designer 128 (Briwall)
8☐ KoalaPainter (Koala)
9☐ Other _____

Integrated Software

21-1☐ Fleet System (PSI)
2☐ GEOS (Berkeley Softworks)
3☐ Personal Choice series (Activision)
4☐ Pocket series (Digital Solutions)
5☐ Vizastar 128/Vizawrite 128 (Progressive Peripherals)
6☐ Other _____

Spreadsheets

22-1☐ geoCalc (Berkeley Softworks)
2☐ Multiplan (Epyx)
3☐ Planner's Choice (Activision)
4☐ Pocket Planner 2 (Digital Solutions)
5☐ Swiftcalc (Timeworks)
6☐ Vizastar 128 (Progressive Peripherals)
7☐ Other _____

Word Processing

23-1☐ Fleet System IV (PSI)
2☐ FontMaster 128 (Xetec)
3☐ geoWrite Workshop 128 (Berkeley Softworks)
4☐ PaperClip III (Electronic Arts)
5☐ Pocket Writer 2 (Digital Solutions)
6☐ Superscript 128 (Progressive Peripherals)
7☐ The Write Stuff (Busy Bee)
8☐ VizaWrite 128 (Progressive Peripherals)
9☐ Writer's Choice (Activision)
0☐ Other _____

Utility

Multifunction Add-Ons

24-1☐ Blowup (DSI)
2☐ Fast Load Cartridge (Epyx)
3☐ Final Cartridge series (H&P Computers)
4☐ JiffyDOS/64 (Creative Micro Designs)
5☐ Mach 5/Mach 128 (Access)
6☐ Partner 64 (Timeworks)
7☐ Quackdas (CDA)
8☐ Quick Brown Box (Brown Boxes)
9☐ RapiDOS (Chip Level Designs)
0☐ Super Snapshot (Software Support Int.)
x☐ Warp Speed (Cinemaware)
y☐ Other _____

Programming Aids

25-1☐ Basic 8 (Patech Software)
2☐ Basic 64/128 (Abacus)
3☐ Blitz! 64/128 (Skyles)
4☐ C-128 Assembler Development System (Commodore)
5☐ geoProgrammer (Berkeley Softworks)
6☐ Merlin (Roger Wagner)
7☐ The Better Working Power Assembler (Spinnaker)
8☐ The Better Working Programmer's Tool Box (Spinnaker)
9☐ Other _____

Utility Programs

26-1☐ Big Blue Reader (S.O.G.W.A.P.)
2☐ Billboard Maker (Solutions Unlimited)
3☐ Graphics Integrator 2 (Inkwell)
4☐ The Graphics Transformer (CDA)
5☐ 1581 Utilities (Free Spirit)
6☐ Other _____

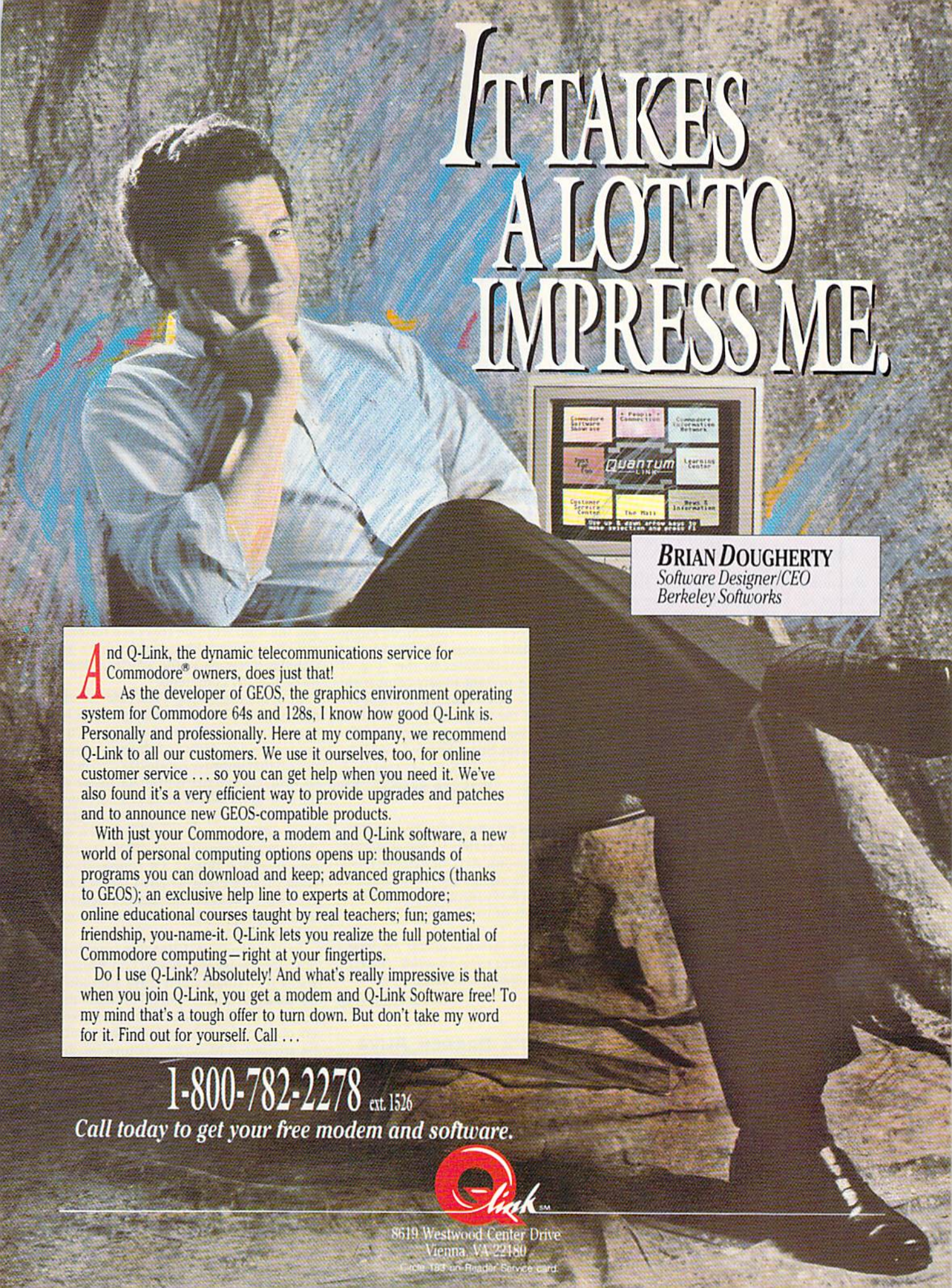
Name _____

Street _____

City _____

State _____ **Zip** _____

Do you subscribe to *RUN*? 27-1 ☐ **Yes** 2 ☐ **No**


IT TAKES A LOT TO IMPRESS ME.
Quantum Link
BRIAN DOUGHERTY
Software Designer/CEO
Berkeley Softworks
And Q-Link, the dynamic telecommunications service for Commodore® owners, does just that!
As the developer of GEOS, the graphics environment operating system for Commodore 64s and 128s, I know how good Q-Link is. Personally and professionally. Here at my company, we recommend Q-Link to all our customers. We use it ourselves, too, for online customer service . . . so you can get help when you need it. We've also found it's a very efficient way to provide upgrades and patches and to announce new GEOS-compatible products.
With just your Commodore, a modem and Q-Link software, a new world of personal computing options opens up: thousands of programs you can download and keep; advanced graphics (thanks to GEOS); an exclusive help line to experts at Commodore; online educational courses taught by real teachers; fun; games; friendship, you-name-it. Q-Link lets you realize the full potential of Commodore computing—right at your fingertips.
Do I use Q-Link? Absolutely! And what's really impressive is that when you join Q-Link, you get a modem and Q-Link Software free! To my mind that's a tough offer to turn down. But don't take my word for it. Find out for yourself. Call . . .
1-800-782-2278 ext. 1526
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Circle 183 on Reader Service card.

MAIL RUN

Readers write about naval simulations and ask what RUN *is up to.*

TRUE TO EIGHT-BITS

What's this I see on your Reader Service card? Quietly hidden away, question J asks how readers feel about replacing some C-64/C-128 coverage in *RUN* with Amiga coverage. A while back you started *AmigaWorld* instead of adding Amiga coverage to *RUN*, but it looks like you're preparing to do an about-face. Are *RUN* readers getting the RUN-around? My answer to question J is 6!

—JOHN KUHNE
NEWMARKET, ONTARIO, CANADA

Rest assured, John, that we have no plans to change our coverage. For the foreseeable future, the name RUN *will remain synonymous with the Commodore eight-bit line. That notwithstanding, if our readers are upgrading to another system, we want to know about it.*

—EDITORS

WATCHING GEOWATCH

I recently subscribed to *RUN* because of the geoWatch column, so I was disappointed to find it missing from the April issue. Will geoWatch be appearing consistently in the future?

—DAVID A. MCINERNEY
SILVER CREEK, NY

We skipped April to establish a new format for geoWatch. Since GEOS is so diverse, we felt we could make the column more valuable to readers by using a variety of authors specializing in different applications. Now you can look forward to an article by a different GEOS expert each month.

—EDITORS

BOUNDING OVER THE MAIN

I must disagree with Bob Guerra's relative rating of Up Periscope! and Silent Service in his February review of naval simulations. Both programs are excellent, but the various capabilities and realistic actions of the Silent Service escort vessels make that game by far the greater challenge to the electronic sub captain. The escorts strive, as real ones would, to drive an attacker away or deep long enough for the convoy to escape, and, like real Japanese destroyers, those here set their depth charges too shallow. In Silent Service, it's also possible to sink a ship with surface gunfire and survive a collision with another ship.

Up Periscope!'s escorts sail calmly on while you pick off their convoy, one by one, and once they find a position in the convoy, there they remain, come torpedoes or high water. If you want to spend a truly frustrating half-hour, try sinking a ship with an Up Periscope! deck gun; it's like throwing spitballs at Hoover Dam. Also, only one torpedo will sink any Up Periscope! ship afloat. Just ask any WWII veteran how often that really happened!

The lack of full information on Silent Service's main screen, far from being unrealistic, contributes to the "fog of war" feeling present in any combat situation. I do agree that Up Periscope!'s graphics of the target ships are better, especially during ship sinkings, but for overall realism, Silent Service wins.

—GARY M. COLLINS
BONNER SPRINGS, KS

I'd like to mention a program not included in your review of naval simulations—Electronic Arts' new Strike Fleet. This real-life simulation of warfare in the modern Navy includes ten scenarios and a variety of naval vessels.

Strike Fleet wasn't available for review when Bob Guerra wrote his article. However, we will be reviewing it in the near future.

—EDITORS

KEEPING A BRANCH ALIVE

I read your "All in the Family Tree" article on genealogy programs last December and then Peggy Martin Perkins' letter about it in April's Mail RUN. Like her, I was surprised that Personal Ancestral File, a fine program from the Church of Jesus Christ of Latter Day Saints (Mormons), wasn't mentioned. If, as you replied in April, the Church is discontinuing the CP/M version of PAF, perhaps they'd release it into the public domain. Could you publish their address, so I and other interested C-128 users could write and make that suggestion?

—ED DESOTO
REMBERT, SC

Sounds like a great idea! Our PAF contact was Lance Jacob, Ancestral File Operations Unit, 50 East North Temple St., Salt Lake City, UT 84150.

—EDITORS

ICS, DISKS AND AN APRIL FIRST

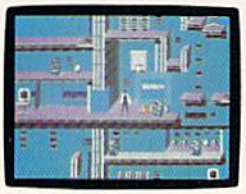
I've just seen the April issue of *RUN*, and the monochrome cover is a refreshing change from the day-glo that's so popular lately. As to the articles, I have three specific comments:

In Troubleshooting Tips, Eric Wendt mentions ICs bearing white splotches in some C-64s as often being bad. The splotches are drops of thermal compound that improve conductivity to heat-sink fingers that reach from the inside of the case to the ICs. If those ICs fail more often than others, part of the cause may be insufficient or improperly placed thermal compound or insufficient pressure from the fingers. Of course, these chips probably have a higher failure rate even when the heat-dissipation scheme is working properly, because of the amount of heat generated.

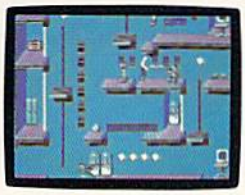
In Commodore Clinic, in the first question under Hardware, Lou Wallace states that single-sided disks shouldn't be used as double-sided, because the reverse side may be defective. I've never encountered a disk problem that could be attributed to surface failure on the back side of a single-sided disk, even at 96 tracks per inch. If there's validity to Mr. Wallace's statement, it may relate to reversing the direction of rotation of the disk, as when you flip a disk in a single-sided drive. This could disturb the disk liner and dislodge foreign material. Most of my experience has been with double-sided drives, where the direction of rotation doesn't change. ►

IF THIS IS THE FUTURE, THEN YOU'RE HISTORY.

Hold it. What's this? Human-seeking suicide robots? An evil mastermind bent on world annihilation?



There are 8 office towers to search, each with its own theme and level of difficulty.



Of course, Elvin's floor plans are almost as complicated as his global plans.

No wonder they call this mission impossible. Why, it's got even more strategy and action than the original top-selling Impossible Mission.™

The trick here is to collect the secret code numbers that will ultimately allow you to access Elvin's stronghold. And waste him before he wastes the world.

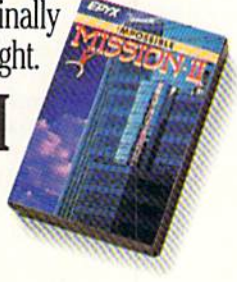
There are over 50 rooms to search for codes. Careful. The floors and catwalks in this place end a little abruptly. And of course, they're guarded by those pesky bots. But you've got an MIA9366B pocket computer to help you crack the security code. A working tape player to play music clues. And a map to show which towers you have or have not searched.

Go then. Elvin is preparing to launch his missile attack in less than ten hours. You must stop him. Or the world will be terminally late for dinner tonight.

IMPOSSIBLE MISSION II

BY EPYX®

Commodore 64, IBM & compatibles, Atari ST, Apple II & compatibles, Amiga



Circle 12 on Reader Service card.

RUNning Around the World

Once again, it's time to publish a list of *RUN* readers who'd like to correspond by mail with other Commodore users. To be mentioned in a future list, send your name, address, type of computer and computing interests—legibly written—to the address at the end of Mail RUN.

United States

T. Gerald Smith
4220 Edinburgh Drive
Anchorage, AK 99515
C-64, C-128; games, word processing, utilities

Art Hirst
1764 S. Anderson Rd.
Exeter, CA 93221

Grant Willey
Rt. 2, Box 329
Delmar, DE 19940
C-128; programming, graphics, GEOS

Danny Wright
1320 NW 76th Ave.
Plantation, FL 33322
C-128; telecommunications, games, programming

Jae Kim
Rt. 1, Box 227-D
Wildwood, GA 30757
C-64; games, programming, desktop publishing

Justin Davis
1 Maywood Drive
Danville, IL 61832
C-64; games, telecommunications

Carl Fisher
1616 Ferguson Ave.
Granite City, IL 62040
C-64; games, word processing, telecommunications

Jose Zavala
1725 N. 43rd
Stone Park, IL 60165
C-64; games

Jim Smith
Rt. 2, Box 148AA
Sterling, KS 67579
C-64; games, programming

Sherri L. Wood
6011 Bay Pine Drive
Louisville, KY 40219
C-128; programming

Sandra A. Cahoe
6012 Bay Pine Drive
Louisville, KY 40219
C-128; public domain software

Aaron Peromsik
28 Hadwen Rd.
Worcestor, MA 01602
C-128; games, graphics, desktop publishing, GEOS

Kevin Kowalski
42208 Ashbury
Canton, MI 48187
C-64; games

Jim Derry
21810 Boulder
East Detroit, MI 48021
C-128; anything to do with computing

Uwe E. Habeck
8725 5th Ave. S.
Bloomington, MN 55420
C-64; music

David Kapsos
563 Sagamore Ave. #10
Portsmouth, NH 03801
C-64, C-128; interfacing, EPROM burning/cartridge-making

Michele Alexander
517 Center Place
Teaneck, NJ 07666
C-64; games

Greg Voronin
440 Carmen Rd.
Amherst, NY 14226
C-64; GEOS, programming, interfacing, robotics, games

Lee Traber
933 W. Warren St.
Shelby, NC 28150
C-64; public domain software, telecommunications

Richard J. McConnell
15006 SE Woodland Way
Milwaukie, OR 97267
C-128; GEOS, graphics, telecommunications

Bill Doyle
PO Box 971
Copperas Cove, TX 76522
C-64; telecommunications, including SYSOPing

Steven Cox
Rt. 1, Box 361
Grundy, VA 24614
C-64; fantasy and role-playing games

Jay Dziuba
PO Box 4713
Richmond, VA 23220
C-64; telecommunications, utilities, games

Raymond G. Holmes
Rt. 1, Box 396
Roseland, VA 22967
C-128, 1750 RAM expander; music, graphics, CP/M, programming in C and Forth

Canada

Universal Commodore Users Group
c/o Steven Hurdle
1518 Myrtle St.
Victoria, British Columbia
Canada V8R 2Z8
C-64, C-128; telecommunications, programming, games, word processing, public domain software

Nelson DaSilva
1431 Mary Ave.
Cambridge, Ontario
Canada N3H 4N8
C-64; games, programming

Kevin Roberts
120 Victoria St.
Salem, Ontario
Canada N0B 1S0
64C; programming, games

Mexico

Pedro Robles Hdez
C-35
C.P. 31160
Chihuahua, Chih.
Mexico
C-64; anything to do with C-64s; can correspond in English and Spanish

Rhett Nieto G.
or The JOCCSA Group
Balboa #135,
Washington y Colon
Fracc. Reforma
C.P. 91910
Veracruz, Ver.
Mexico 35-29-80
C-128; programming, games, utilities

Poland

Adam and Tomasz Wisniewski
31-021 Krakow
Florianska 22/2
Poland
C-64; databases, word processing (in various alphabets), linguistics, CAD

With respect to Telecomputing Workshop, I called QuantumLink to inquire about their "no-smoking online policy." It turns out they've received so many cries of anguish, they've set up a Smokers' (tobacco only) area of the network. To access it, you log on normally, but add an S to your password. The Smokers' area contains especially profound and thought-provoking files that aren't available elsewhere on Q-Link.

—David McLanahan
Marlow, NH

Although the files in the Smokers' section may be special, they're difficult to read because of the haze.

—Editors

A Call to Readers

This page is your stage, so stand up and say a few words. Extend praise, air grievances or offer hands-on advice and information.

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN *reserves the right to edit letters for style, clarity and space.* ■

up periscope!

Our first advertising for Up Periscope! boasted of the program's vast superiority over other sub simulators, and detailed the many features that place it generations ahead of the pack.

Now that these facts have become common knowledge, we've asked the man behind the program to go into a bit more detail about how this simulation was created. As Captain John Patten, USN (Ret.) explains:

"I like to think of Up Periscope! as the Flight Simulator of submarine software. In fact, much of the program's 3D graphic routines come directly from Microsoft/SubLOGIC Flight Simulator.

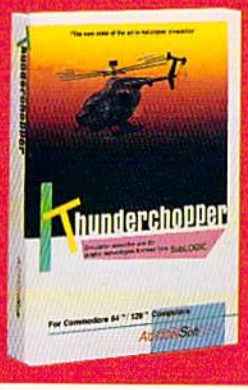
"Whether or not you agree with my terms, you'll have to agree that Up Periscope! has the polish to provide years of unparalleled pleasure. Split-screen views give you the freedom to perform your duties without having to constantly change displays. SubLOGIC 3D graphics provide the realism missing from other submarine simulations. Unlike the U.S. Navy, this sub lets you go on liberty at a moment's notice by saving your mission-in-progress to disk. And I've even included a book about the strategies and tactics I taught in submarine school, with excerpts from actual WWII patrol reports.

"I've used my 24 years of Navy experience to give Up Periscope! the ultimate strategic realism. Experience the sophisticated action and strategy of Up Periscope! for yourself. You'll agree - this is the finest sub simulation available."

Split-Screen View

Enemy Convoy

Torpedo Data Computer



See Your Dealer...

Circle 26 on Reader Service card.

Or write or call for more information. Up Periscope! is available on disk for the IBM/Tandy/compatibles and Commodore 64/128 computers. For direct orders please indicate which computer version you want. Enclose $29.95 plus $2.50 for shipping (outside U.S. $6.95) and specify UPS or first class mail delivery. Visa, MasterCard, and American Express charges accepted.

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Commodore 64 and Commodore 128 are registered trademarks of Commodore Electronics Ltd.
IBM is a registered trademark of International Business Machines Corp.
Tandy is a registered trademark of Tandy Inc.

-$29.95-
Better Engineering at a Better Price

ACTIONSoft
"GENERATIONS AHEAD IN STRATEGY ACTION SOFTWARE"

201 WEST SPRINGFIELD AVENUE, SUITE 711
CHAMPAIGN, IL 61820 (217) 398-8388

SOFTWARE GALLERY

School is out, just in time for train rides, flying a helicopter and waging naval battles—on your Commodore, of course!

Compiled by BETH S. JALA

INFILTRATOR II ..... A

Good Guy Versus Bad Guy: Who Will Be the Winner?

Infiltrator II is an outstanding sequel to Infiltrator. It features all the elements of a good comic book, from a hero-versus-villain theme to action, excitement, mystery and humor.

This program should appeal to a wide variety of computer gamers. It is a role-playing graphics adventure, flight simulator, arcade and strategy game, all rolled into one.

In true comic book fashion, the computer gamer portrays all-American hero Captain Johnny "Jimbo Baby" McGibbits in his quest to destroy the evil villain, Mad Leader. Failing to do so could mean—what else!—the end of civilization as you know it.

Even though you're one of the world's greatest heroes, it's going to take everything you've got, and then some, to complete your quest. The Mad Leader won't knuckle under until you've completed three missions. Each mission requires you to fly a helicopter into enemy territory, complete a ground mission within the enemy compound, fly back to home base and land safely.

A successful landing in enemy territory gives you the opportunity to embark on one of the three ground missions. Each one involves exploring nine different screens and the many buildings that make up the enemy compound. You must also investigate the maze of rooms in the buildings.

You get five chances to finish a ground mission. If you can't complete a mission before you lose your five lives, you must start over again from home base.

You begin each ground mission equipped with supplies like sleeping gas, fake identification papers and a mine detector. You can add other items found in the enemy compound to your arsenal. In some cases, it's necessary to find specific elements in order to conclude a mission.

Throughout each mission, you'll run into many of the Mad Leader's loyal guards. They patrol both the compound and the rooms within its buildings, so you'll need quick reflexes and wits to make your way around. You may fool one guard with your fake papers but have to gas another to get him off your back. And, your reflexes are also tested as you first try to fight off other aircraft and then keep your own craft from pitching to one side or descending too quickly while landing behind enemy lines or at home base.

The flight simulation and ground mission phases of Infiltrator II are both marked by clear, detailed graphics, smooth animation and accurate response to input from joystick or keyboard. These characteristics make it a pleasure to play the game, despite the very difficult challenge it presents.

Infiltrator II is the type of game you can enjoy for many hours. But before you boot it up, take some time to read the manual. It's almost as enjoyable as the game itself, presenting a humorous, clever and thorough overview of Infiltrator II that will leave you chuckling and well-prepared to defeat the Mad Leader.

Once you start playing, don't get so wrapped up in the game's formidable challenge that you overlook Infiltrator II's comic relief. For example, after you've failed a ground mission, you might be greeted by the message, "Get a real job!"

It would be a shame to give away too many jokes and punch lines, and it's fruitless to try to convey all of the game's outstanding features in a review of this size. A program as good as this one really must be played to be fully appreciated. *(Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. C-64/$34.95.)*

—SCOTT WASSER
WILKES-BARRE, PA

THE TRAIN: ESCAPE TO NORMANDY ..... B+

This is Like Playing Hogan's Heroes On Your Commodore!

Never before has anyone designed a C-64 program that places you, as an engineer, in the cab of a snorting, vibrating and slightly misbehaving steam train. As a die-hard steam locomotive fan, this is my fantasy by the coal firelight.

The Train entails a lot more involvement on your part than simply donning an engineer's cap and shoveling ►

REPORT CARD

A Superb!
An exceptional program that outshines all others.

B Good.
One of the better programs available in its category. A worthy addition to your software library.

C Average.
Lives up to its billing. No major hassles, headaches or disappointments here.

D Poor.
This program has some problems. There are better on the market.

E Failure.
Many problems; should be deep-sixed!

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coal into the boiler. You, in the role of Pierre LeFeu, are assisted by an injured comrade-in-arms named Le Duc. You're both members of the WWII French Resistance movement, whose mission is to capture a trainload of priceless art at midnight and deliver it to Allied forces in France before 8:00 AM.

Don't wait for the conductor to bellow "All abooaarrd!" when the game starts. Instantly open fire with your fully automatic machine gun (joystick) and mow down the Nazis that appear in the railroad station's windows—you can bet they're going to be shooting at you. At the same time, Le Duc will be running across your line of fire to get into the station. Believe me, it's impossible to get used to accidentally gunning down your only companion with a shower of 50-caliber rounds. But don't worry—he must be wearing the world's best flak jacket, because he's apparently unaffected by your shots.

Once you've wasted a squad or two of Germans, the shooting stops and you must select a skill level. Next, you board the train, and the shoot-'em-up element of the game is put on hold while the simulation/strategy begins.

Your joystick now controls a four-position throttle, brake, forward/reverse lever and steam blow-off. Analog gauges for measuring speed, water temperature and steam pressure adorn the cab's control panel. Naturally, like any engineer worth his weight in axle grease, you also get to blow a whistle; unlike any engineer (where's the fireman?), you also get to shovel coal into the engine's boiler.

As you release the brake and begin chugging forward, everything—the control panel, the scenery out the side windows—begins to shake. Don't leave the throttle open too long, however, or you lose pressure and damage the boiler.

Suddenly, the entire mood changes, and life becomes a confused frenzy of mistakes in judgement. A message appears stating that an enemy airplane is attacking the front of the train. Quick! Read the manual! As the plane's motor roars louder, you see that the manual instructs you to "press 1" for a front view of the train.

So then you've got the view from the front, complete with a forward-mounted machine gun, but where in tarnation is the airplane? Quick! "Press 2" for a rear view! Ah-ha! There's that Nazi warplane, heading out of sight over the horizon. Oh no! A new message says that another plane is attacking! What to do? Quick! Press 1—there's that plane coming in low—just move the sights over to the left a little, line it up and ratta-tat-tat-tat-BOOOM!!

You'll also receive warnings of approaching railroad stations when you get within nine kilometers of them. For a maximum score, stop at every station and pump out some more rounds at the bad guys.

Inside these stations, you'll find German messages describing the condition of the tracks that lie ahead. Heed those messages, or you'll find yourself ditching the train because you, like the prov-

You'll need quick reflexes to find and fire at the enemy plane that attacks The Train.

erbial freight train to Georgia, ran out of track.

You can send for repair help or for members of the Resistance to clear the bridges and stations ahead. Speaking of bridges, you need to stop at every one of them, or else the game ends. At uncaptured bridges, you have to sink four ships—with the 155 mm cannon at your disposal—that are lobbing artillary shells at you.

When you repeat the above station-taking, airplane-shooting, ship-shelling, boiler-overheating/underheating and assorted train-wrecking for 20 to 40 minutes non-stop, you've got a fantastic game. However, it's not without some shortcomings. You soon become accustomed to the routine and know where to turn, when to shovel, and how to shoot.

While the graphics are vividly animated and finely detailed, a little more imagination could have done wonders. I'd love to see a stowaway Nazi attack the engineer in route, or maybe have a French damsel in distress tied across the tracks, waiting to be rescued. Variety could've been added to the engineer's duties by letting him perform mechanical repairs (patch the boiler, fix the brakes, etc.) at the station.

Regardless, The Train represents a fine piece of software for your Commodore. Besides, tell me, how else can a train fanatic like myself enjoy a steam engine ride during my lunch break? *(Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014. C-64/$29.95.)*

—TIM WALSH
RUN STAFF

HIGH SEAS ..... B+

All Hands on Deck, Or, in This Case, On Keyboard!

There is a controlled confusion of men scrambling about the deck. Orders are shouted, cannons loaded, sailors rushing fore and aft. The sharp snapping of canvas and creaking strain of ropes and wood add to the tension. The enemy ships are closing in fast. Now it's a matter of who the better commander is. They have six ships to your four, 236 guns to your 124. The wind isn't with you, but it isn't really with the enemy, either. If your line holds together long enough, you just might have a chance. If not, your ships will be caught in a devastating attack to both port and starboard. Who will be the first to open fire? Should you shoot first and hope to cripple one of the enemy ships, or hold fire until the last moment when it will do the most damage?

These are the kinds of questions you'll have to answer when playing High Seas. As an 18th century commander, this action simulation puts you in charge of six kinds of warships. You can play against the computer or another opponent and control the game via either joystick or keyboard.

High Seas is not an arcade-style game—it should really be considered a strategy game more than anything else. Open fire too soon, and the enemy will be upon you before you can reload. Open fire too late or when the angle isn't quite right, and the enemy will cripple you before you have a chance to adjust.

The system used in High Seas is well chosen. Sea battles are like dog fights in slow motion: a great deal may be going on but it takes a long time for things to develop. You end up planning, giving orders and checking things before setting it all in motion. You sit back and watch until the com-►

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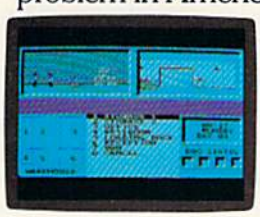

You can bug the thugs and watch the warehouse, both at the same time.

You've got the highest of high-tech surveillance vans to work from. You've also got a rookie to work with. We're talking "rookie" rookie. Zero experience.

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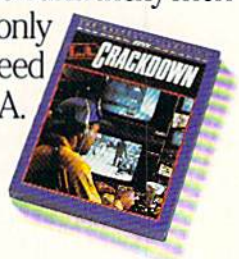
You'll also need to draw on every strategy brain cell available. If you're not thinking every minute, you might just spend all evening waiting on a street corner for a suspect who's never coming.

L.A. Crackdown. If you think your nervous system can handle the surprise action and tricky mental clues, there's only one thing you need to do. Move to L.A.



L.A. CRACKDOWN

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puter stops the action to notify you of different events or when a reaction on your part is needed.

There are dozens of options in both the initial setup of High Seas and during game play. You can design your own scenarios or use one of the 11 that are supplied. You can decide the wind's speed, direction and frequency of change, pick how the sails are set, determine when to fire at which targets and how the guns are to be loaded.

There are status and damage reports and six types of shot you can load into the cannons. All these options, plus the usual save game, load game, and so forth, are selected by using a drop-down menu system.

Overall, High Seas is well designed. It's fairly easy to learn, and there are enough options to give the game some depth. In the two-ship scenarios, the action moves along at a good pace, but when you get into the more complicated seven, eight and even 15-ship scenarios, matters begin to slow to a crawl. It's possible to design a scenario consisting of up to 68 ships, but it would probably be impractical.

One flaw in the game design is that it's easy to lose track of the battle. If a ship takes rudder damage and sails off before repairs are made, it can be difficult getting back to the action, and the map views don't help much. But if you keep track of things carefully and don't try to command entire navies, then High Seas can be very challenging entertainment for a few hours.

It's a good game with good play techniques. The number of options adds realism and depth. And the computer plays a tough game, which makes it that much more enjoyable when you fire that final volley of shots and the enemy strikes his colors. *(Gardé, 8 Bishop Lane, Madison, CT 06443. C-64/$49.95.)*

—GUY WRIGHT
AMIGAWORLD STAFF

KNIGHT ORC ..... B–

You Poor, Oppressed Little Orc!

You are a pungent little creature, little bigger than an overweight elf. You have the charisma of a blowfly and the appetite of a glutton. You have little or no magic and only rudimentary skills with a knife and a strangling cord. You are unusually ugly, even for an orc. Your name is Grindleguts.

This is not the way you've always pictured yourself, but it's what you're stuck with in Knight Orc. You start the game by waking up to discover that you've been chosen as champion of all the orcs. To ensure that you don't decline the honor, you've been knocked out and tied to a horse, and are about to face a lance-wielding knight who is headed straight for you!

Fear not! You'll make it through the joust alive, although there may be times when you'll wish you hadn't.

Knight Orc is divided into three parts. In the first section, your main job is staying alive long enough to collect ten pieces of rope that will help you get across a chasm and back home. A couple of the puzzles here are clever, but it's mainly a basic text adventure.

Parts two and three tend to blend into each other, yet this is where the game really becomes a challenge.

Armed with nothing more than a cloak and a visor that makes the whole world take on a new look, you must find and learn 20 magic spells, recruit followers and eventually find an escape from this magic kingdom into the outside world. Along the way, you must keep from being killed by marauding humans, burned to a crisp by a dragon, fleeced by a mercenary troll and foiled by a dozen other pitfalls that threaten to shorten your life expectancy.

One very innovative feature of this game is the interaction with others. You must recruit several characters to help you with various problems. These characters lead completely separate lives, moving about independently as you "do your thing." You can tell a character to go to the castle, kill the magician, steal the gold and bring it to you at the bridge. You go about your business, and in a few moves, that character shows up with the treasure at the bridge! By telling various characters to wait one or two moves before performing an action—attacking, for example—you can have four or five companions simultaneously attack someone with you! That aspect, along with the wonderful graphics, makes the game quite remarkable.

Knight Orc does, however, contain a few minor problems, one of the most irritating of which is the restore feature. To protect their product, Firebird includes a password in the lengthy novel that comes with the game. This password must be typed in every time you use the restore option, which is extremely annoying when you're trying various solutions to a puzzle. I think it's quite unnecessary: one password per session is sufficient to prove that you have the manual. Adding insult to injury is the fact that every time you press the restore key, the game asks "really restore?" This may not sound like a big deal, but after several hours of it, you find yourself answering aloud with phrases not generally understood by text adventure games!

Another nuisance is that several characters keep repeating the same action throughout the game. For instance, while learning a magic spell from a mouse, you're told that "the mouse is talking quickly; it seems to be trying to tell you something." After you interpret what the mouse is saying, you get the same description every time you're in the vicinity of the mouse—and you spend a lot of time with that little critter! It seems like a bit of sloppy programming in what is otherwise a quality product.

The one thing I really took exception to was a puzzle that seemed to me insolvable unless you happened to be familiar with *The Lord of the Rings*. I found no other clue in the game as to how to solve the problem, and I don't think it should be assumed that everyone who plays this game will be familiar with a particular piece of fantasy.

Other than those problems, the game is highly enjoyable and provides a real feeling of accomplishment when you make your way to the end. It's a worthwhile addition to any adventurer's library. *(Firebird; distributed by Activision, 2350 Bayshore Parkway, Mountain View, CA 94043. C-64/$39.95.)*

—ART LEWIS KIMBALL
TUSCOLA, IL

MAGNETRON ..... B+

Step into Your Anti-Gravity Suit Before You Step Into the Future!

If I had a byte of memory for each time I've heard someone bemoan the death of arcade/action games, I'd have enough storage to make an Amiga 2000 look like a calculator. While it's certainly true that simulations and strategy games have taken up a fair slab of the entertainment purchases in the last 12 months, arcade/action games—just as classy and wrist-aching as their prehistoric counterparts—are once again beginning to appear on the shelves.

Unlike the post-Pac Man era, where half-baked imitations (mostly written in Basic) flooded the market, today's arcade games possess three very important characteristics: stunning graphics and ►

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sound, playability and the inherent ability to bring you back for more action time and time again. Magnetron might not attain the star status of those mentioned above, but it certainly deserves the honored "arm's reach" position at the computer.

Magnetron is a space shoot-'em-up that stands out for several interesting reasons, the least of which is the game's splendid graphics and fluid play. At the heart of what makes this program shine is its brilliant simulation of gravity and magnetic forces at work. You see, Magnetron takes place far into the future, where you, the last starship, must save Earth from 50 alien fortresses. Sounds familiar, you say? While zipping about in zero-gravity is tough enough for the aspiring space cadet, you must also contend with the unpredictable effects of the tremendous magnetic fields generated by these fortresses.

These fortresses are really armed satellites. To destroy them, you must pilot a small fighter into the heart of the stronghold and knock out the enemy defenses. But take heed, the magnetic forces within the space citadels make this task a very difficult chore. While one moment you're drifting one way, a sudden shift of gravity can launch you in the opposite direction, and probably into a wall or some other foreign object likely to cause death.

Remember some of the earlier space games, where you tried to navigate down a narrow alley without destroying yourself in the process? Imagine trying to do so with huge magnets attempting to pull your ship asunder at every turn!

Each fortress represents a level of play. As you jet about, blasting and dodging, unpredictability knocks at every corner. Even the walls of the fortress can have you guessing, for even though a fighter can bounce off or pass directly through some walls, a sudden impact on others instantly generates an aluminum dustcloud from your little photon fighter.

Learning how to move about in this superb three-dimensional environment can be tedious at first. Each fortress is viewed from an overhead perspective, and your photon fighter can be controlled from either joystick or keyboard input. It's extremely tough to control the fighter until you become very familiar with the joystick operation; this might take several smash-and-trash outings!

The difficulty in navigating about the fortresses might prove frustrating to some players. Younger gamers could even have trouble getting in and out of the first fortress alive. Don't give up; Magnetron includes a fortress editor. With just a little effort, you can easily create devastating death traps or weak, toddler-level space camps that can be saved to a separate disk and used in lieu of the standard game fortresses.

Overall, I was pleased with Magnetron. With its colorful graphics, smooth play, high-score menu and multiple skill levels, I felt as though I had stumbled upon an old friend. *(Broderbund Software, Inc., 17 Paul Drive, San Rafael, CA 94903. C-64/$24.95.)*

—JOHN RYAN
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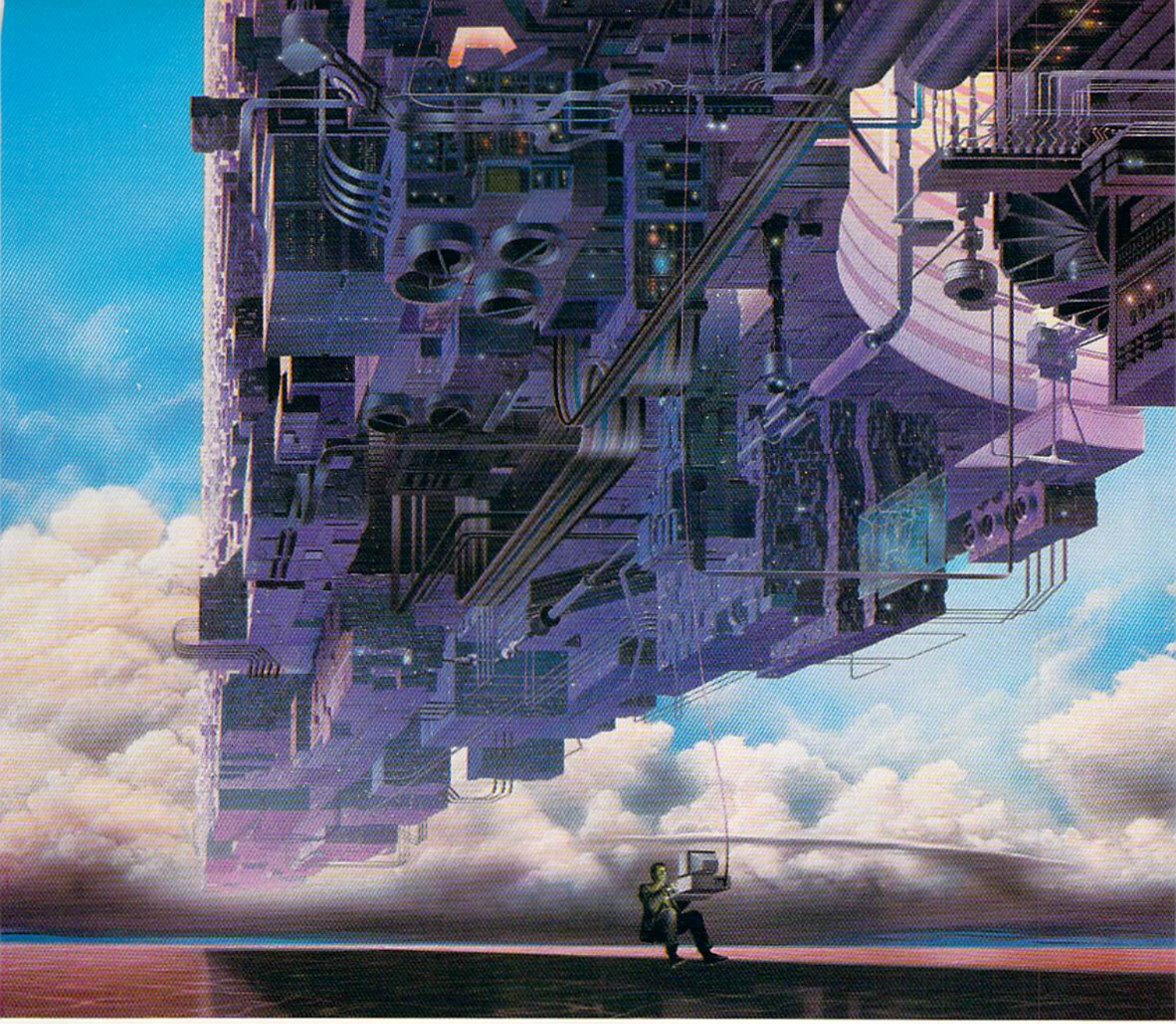

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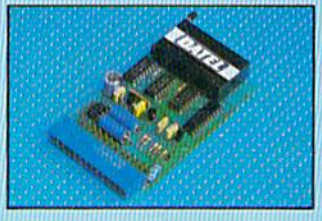

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THE LATEST W·O·R·D

Several new contenders have stepped into the word-processing fray. Which one will win your allegiance?

WORD PROCESSORS HAVE BATTLED for years to be king of the market mountain, and the sparring continues unabated in 1988. In this article, I survey five word processors for Commodore computers that have been released in recent months. As usual, each offers a variety of features, and they sell at a range of prices.

In Table 1, you'll find a summary of the features of these programs. Refer to Table 2 for a list of distributors and prices.

PAPERCLIP III

PaperClip III must be ranked as one of the finest word processors currently available for the C-64 or C-128. It supports most of the latest hardware for the 128, includes most of the features you'd expect to find in the best word processors and offers a few new ones as well.

First, a standing ovation for Electronic Arts, the new parent company for PaperClip's developer, Batteries Included, for removing all copy protection from the new version. Not only does this eliminate head banging on a 1541 disk drive and enable you to make backup copies, it also makes the program easily transferred to a 3½-inch disk for use with a 1581 drive.

I hope other companies will follow the lead set by EA. I also hope that users won't abuse the trust implied by this action. If PaperClip III begins to show up on bulletin board systems, it won't be long before industrial-strength copy protection will be back.

When you purchase PaperClip III, you'll find two disks in the box, one for the C-64 and one for the C-128. Each disk contains the word processor on one side and a dictionary on the other. The versions are similar, the major differences being that the C-128 program offers an 80-column video display and supports the Commodore RAM expansion unit. (Note: The instructions aren't clear as to whether it supports only the 1750 RAM expander or both the 1750 and 1700.)

Electronic Arts has made the best use I've seen yet of the RAM expander in conjunction with a spelling checker. After the first check of a document, the contents of the dictionary are stored in memory. Then you just toggle the dictionary for further checks. You can even have the program prohibit more typing until the misspelled word is corrected.

The spelling checker includes a feature referred to in the instructions as an auto-expander, which allows two or more letters to act as triggers for longer phrases—VTY for "very truly yours," for example. These extenders are stored in a file and placed in memory whenever the program is loaded.

Unique to PaperClip III is its built-in telecommunications program, also loaded into memory so you can toggle between it and the word processor. You can write text with the word processor, format it and then transmit it to another computer or a BBS via this telecommunications option. The terminal program is also capable of uploading and downloading files via the X-Modem, X-Modem CRC and Punter protocols, and it includes a phone book that can store the phone numbers and terminal configurations for up to ten bulletin boards. ►

By MICHAEL CAVANAUGH

PHOTOGRAPH BY PAUL AVIS

The strength of FontMaster 128 lies in the way it handles graphics, not text.

PaperClip III has a few minuses. Column movement is somewhat limited, being designed more for manipulating tables and numbers than text, but this isn't a big problem unless you intend to work in a two-column, newspaper format. Then, the dictionary is rather small—40,000 words—for a professional word processor, but it's capable of virtually unlimited expansion. The most glaring problem is the lack of a thesaurus, a feature that has become almost standard in top-end programs.

While there's a very good mail-merge feature built into PaperClip III, this program is not part of an integrated productivity system. Electronic Arts does offer a database, The Consultant, but there's no mention of it in the PaperClip III instructions, so I assume they're not compatible.

PaperClip III is a post-formatted word processor, with the format commands embedded in the text. As a result, you must go to the video output feature to see how the text will look on paper. The video output shows italics, underlining, and super- and subscripts on the screen, and all the text enhancements, including boldface and combinations such as bold italics, are highlighted in user-defined colors. Line spacing is also displayed, something most of the what-you-see-is-what-you-get word processors don't offer.

FONTMASTER 128

Xetec's FontMaster 128, a surprisingly easy-to-use program, is part word processor and part desktop publisher. It lets you develop two set-up modules, each with a separate printer/interface configuration, and then switch between them from within the main program. It also supports over 100 printers and 20 interfaces, and, in case your hardware isn't among these, lets you customize the printer modules. There's even a test program you can run from within a setup file to make sure your printer/interface selection is working properly.

FontMaster 128's major commands are displayed in menus in the upper portion of the screen. While you'll need the manual to get started, I think you'll find after a few sessions that the on-screen menus are enough to get you through most writing chores.

Like PaperClip III, FontMaster 128 is not copy-protected. It does, however, require the use of a dongle to save or print a file. The dongle is unobtrusive, attaching to the cassette port on the back of the computer, and the power cord for a printer interface is piggy-backed to it.

Since there's no copy protection, FontMaster 128 can be transferred to a 3½-inch disk with a simple file copier. When you are using the 1581 drive, the load time for this program drops from 33 to 20 seconds.

A new 100,000-word dictionary called SpellMaster 128, which works with FontMaster 128 and can be loaded into a 1700 or 1750 RAM expander, is available by mail from Xetec. The dictionary includes alternative spellings, and you can look up words using * and ? as wild cards. SpellMaster 128 must be used with a compatible version of FontMaster 128, so Xetec sends the correct version of the word processor with the dictionary. No, you're not entitled to get another dongle!

The two biggest weaknesses of FontMaster 128 are its inability to chain files, thus limiting you to a maximum file size of about 64K, and the lack of on-screen formatting. There is a Video Preview mode that shows characters in their graphic form, but it displays only 53 columns across until you scroll it horizontally to reveal more columns. It's also impossible to scroll backward.

Like PaperClip III, FontMaster 128 includes a mail-merge feature, but is not compatible with a database or spreadsheet. It also has no thesaurus.

The strength of FontMaster 128 lies in the way it handles graphics, not text. It comes with over 45 easy-to-load and easy-to-use fonts, including Hebrew, Russian, Greek and Arabic. In addition, hi-res graphics, including those created with Print Shop, can be imported, edited and inserted into the text. You can also direct your printer to print in Dot Matrix mode, so you aren't forced to sit through the slow Bit-Mapped Graphics mode if no special characters are required.

FontMaster 128 isn't the word processor to use for writing the Great American Novel. However, if your normal documents are of small to medium size (less than 30 pages) and you enjoy using a variety of fonts and characters, this program is for you. More than useful, it's fun, and any time you combine those two elements, you have a real bargain!

WORDPRO

Spinnaker's WordPro with Turbo Load and Save, a word processor for the C-64, was a big disappointment to me. While the program has no glaring faults, neither has it any innovations. It appears, with the exception of a very large dictionary, to be a throwback to the word processors on the market about two years ago.

Like the other programs mentioned here, WordPro has no copy protection. It does, however, require the use of the Turbo Load and Save cartridge for loading the program. Unlike the FontMaster dongle, I found this little device very obtrusive, because it prohibits use of two of the more popular options for the C-64: Partner 64 and the 1764 RAM expander. Of course, cartridges can be switched, but I've always worried about excessive wear to the cartridge port.

The program is also needlessly quirky and difficult. For example, to change the default printer file, you must rename files in the directory, and to change screen colors or drive numbers, it's necessary to load and edit the Install program, and the manual warns that both procedures are not for the inexperienced. Instead of trying to frighten users, why not just recommend that they copy the program and edit the copy? More to the point, why should specifying a printer and new screen colors be so complicated and dangerous?

WordPro does load quickly with the Turbo Load and Save cartridge in place—less than 20 seconds with a 1541 drive. The cartridge also acts as a fast loader with most other software, and it enhances Basic 2.0 with a Spinnaker version of the DOS Wedge.

The label on the cartridge states that it can be used with both the C-64 and C-128, but there's no selector switch, so a 128 defaults to 64 mode when it's turned on with the cartridge in place. The cartridge also places a 1571 in 1541 mode, and it doesn't recognize the 1581 drive.

I did find a few interesting features in WordPro, among them the alternate pages and double-sided output commands. With the Double-Side command, you can print all the even pages of a document, then remove the paper and reinsert it in reverse to print the odd pages on the blank sides. The Alternate Pages command ensures that when double-sided printing takes place, items such as page numbers are located in the same place on both the fronts and backs of sheets.

WordPro comes with a 100,000-word dictionary—one of the largest available for the C-64. Alternative spellings, however, are not included among its listings. The spelling checker is on a separate disk, but it can be loaded directly from the word processor, and text can be edited from within the Spelling Check mode.

WordPro interfaces with Spinnaker's FilePro 64 database, although no mention of this is made in the instructions. Rather, it's noted in a little promo on the back of the box.

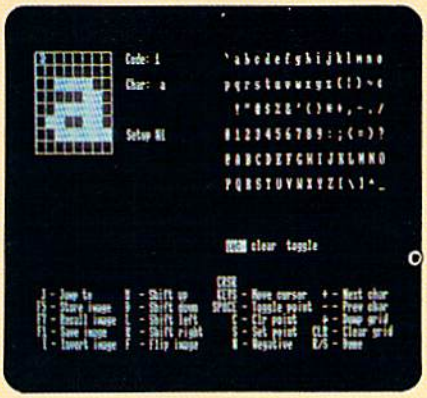
WordPro isn't a bad word processor; it's just that there are so many better ones now available. This is a product whose time has come—and gone.

GEOWRITE WORKSHOP 128

GeoWrite Workshop is an 80-column what-you-see-is-what-you-get word processing package to be used with GEOS 128. The centerpiece of the package is geoWrite 2.1, an upgrade of the word processor that comes with GEOS 128. With this upgrade, you can format paragraphs individually; justify text; get single-, double- and one-and-a-half line-spacing of text; print super- and subscripts; incorporate headers and footers; and perform search-and-replace operations.

Along with geoWrite 2.1, the Workshop disk includes a number of utilities that expand the power and versatility of the word processor. GeoMerge inserts outside data into form letters, and geoLaser enables you to print documents on the Apple LaserWriter, which produces almost typeset quality. The Paint Drivers generate overlays you can merge with any document produced by geoPaint or geoWrite.

Numeric data can be merged into Workshop documents from geoDex, geoFile and geoCalc, and the program's Text Grabber imports text from Fleet System 4, WordWriter 128 and PaperClip II. You can also import documents created ►

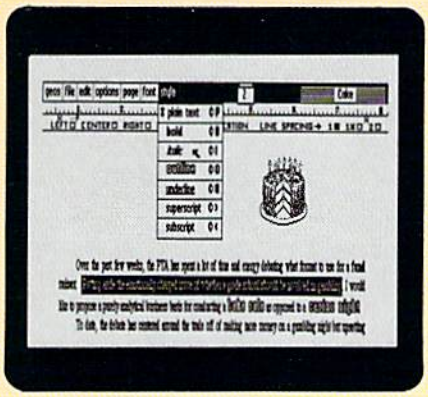


Creating a variety of fonts is one of FontMaster 128's enjoyable features.

BB File Reader: Print Menu Help
Busy Bee Software
P.O. Box 2959
Compoc, CA 93438
Dear User,
The Write Stuff is a collection of word processing and related software which currently includes a full-featured word processor, a talking word processor, a printer customizer, and three freeware programs: BB File Reader, BB Menu Maker, and BB Manual Maker. In the near future, version 2.0 with dictionary disk will provide on-line spelling, thesaurus, and usage checking with lots of help files to help you write it right.
BB Writer was designed to meet the needs of two types of users:

Demonstration text supplied on The Write Stuff's disk.

A look at PaperClip III's main menu hints at the many features included in the program.



Want to emphasize a word or a line in your geoWrite document? Try *italicizing* it!

The Write Stuff may not be fancy, but neither is it stripped down.

with other word processors by using Text Grabber's Generic Form file, but such text is stripped of all formatting commands. Linked files cannot be imported as individual units.

The Workshop provides three printing modes. High Quality prints text exactly as it appears on the screen, including fonts and print styles. Near Letter Quality produces the format on the screen, but works only with the Commodore 10-point font. Draft mode is only for rough drafts.

While there's no spelling checker built into geoWrite Workshop, a separate Berkeley program, geoSpell, will do the job. Working in 40-Column mode, it checks spelling in any geoWrite document, including those created with other word processors. The dictionary is small, at 28,000 words, but it does provide alternative spellings, and you can expand it by creating your own dictionaries.

With geoSpell, there's a font editor, called geoFont, that lets you change both the size and shape of existing fonts, as well as create new ones. The directions are clear, and the editor is easy to use.

You can't run geoSpell from within the Workshop, but must save your documents first and then spell-check them. Another drawback to geoSpell is its very slow speed. It took me over ten minutes to check a five-page document! The Workshop can generate documents up to 62 pages long, and I shudder to think how long it would take to spell-check something of that size.

Both geoWrite and geoSpell must be installed before use, a process I had problems with. Thankfully, Berkeley's Rob Siegel came to my rescue. He explained that early versions of geoWrite Workshop and GEOS 64 applications used with GEOS 128 require the disk drives to be in *1541*

Table 1. Product features.

	PaperClip III	PaperClip III	WordPro	The Write Stuff	geoWrite Workshop	FontMaster 128
Computer	C-64	C-128	C-64	C-64	C-128	C-128
Copy-Protected	N	N	N[1]	N	N	N[1]
Dictionary	Y	Y	Y	N[2]	N[2]	Y
Thesaurus	N	N	N	N	N	N
On-Screen Formatting	N	N	N	N	Y	N
Approx. Text Size in 56-Line Single-Spaced Pages	2.5	7.5	4.5	10	62	30
Links Files	Y	Y	Y	Y	N	N
80-Column Video Preview	N	Y	Y	N	NA	Y[3]
Spelling Check Time[4]	3.5 min.[5]	18 sec.[6]	1.75 min.[6]	– –	11 min.[6]	49 sec.[6]
Integrated with Database/ Spreadsheet	N	N	Y	N	Y	N
Supports Multiple Drives	Y	Y	Y	Y	Y	Y
Supports 1581 Drive	Y	Y	N	N	Y	Y
Supports RAM Expanders	N	Y	N	Y	Y	Y

1—Uses dongle. 2—Dictionary function available in separate program.
3—Video preview is 12 lines by 53 columns, but text can be scrolled horizontally.
4—Spelling-check times for PaperClip III and FontMaster 128 represent time required after dictionary was loaded into RAM.
5—Length of document checked, approximately 700 words. 6—Length of document checked, approximately 2700 words.

mode during installation. This problem has been eliminated in later versions, but there still may be some programs on store shelves with this impediment.

At its heart, geoWrite Workshop is a graphics text editor. While this latest version of geoWrite does offer basic word processor features, they're slow and clumsy. However, for printing graphics or text using a variety of fonts, styles and sizes, the Workshop is hard to beat. I'd suggest using a word processor such as PaperClip III to create your documents, then geoWrite Workshop to enhance them. In that way, you can have your cake and eat it too!

THE WRITE STUFF

The Write Stuff, originally sold through user's groups and now available from Busy Bee Software, is one of the most innovative, interesting and inexpensive programs I've ever seen. This C-64 word processor supports dual drives and RAM expanders, does two-column printing and, if that isn't enough, even talks!

The distribution of the program is unique, too. You can buy a single copy from the company or act as a distributor, thereby receiving substantial discounts through purchasing in quantity. A single copy (including the speech synthesizer, a keyboard overlay, a 12-page instruction booklet and a reference manual) costs $24.95. The same package in amounts of 50 or more costs only $11.25, and, if the bulk order doesn't include reference manuals and keyboard overlays, the price drops to $8. Busy Bee states that their policy is to develop worthwhile, low-cost software as a deterrent to piracy. It looks like they have.

The Write Stuff may not be fancy, but neither is it stripped down. Among other features, it lets you save documents as sequential or program files, set up macros (two letters to replace a word or words), switch between a Dvorak and Qwerty keyboard, encrypt text (so it can be loaded and read only by those who know the password) and store two documents in memory at the same time. RAM expansion units are supported, although you'll need the public domain RAMDOS program (specifically, RAMDOS111286.BIN and FILECOPY.BIN) to use them.

Some 57 pages of help files are available from within The Write Stuff, and should you care to make hard copies, you can refer to the index in the instruction booklet to locate the ones you want. There are also text samples and tutorials on the disk.

The flip side of the disk contains BB Talker, the heart of which is S.A.M., the Software Automatic Mouth. BB Talker comes with a number of familiar songs and nursery rhymes to be loaded, read and heard, and instructions explain how you can write your own with ease. Kids love BB Talker, and it's a great way to teach preschoolers the alphabet. Its nine voices sound mechanical, but are generally understandable.

There's no dictionary with The Write Stuff. However, when its text files are saved in the ASCII sequential file format, they can be checked by a number of other spelling checkers, including RUN Script's.

The Write Stuff does include a mail-merge function, and, for those who need more powerful searches, it can be interfaced with Superbase. Instructions for using the two programs together appear in the reference manual.

Busy Bee is currently working on a C-128 version of the program, which should be available this summer. They're also planning updated versions for both the C-64 and C-128. The updates will include a thesaurus, along with both spelling and usage checkers. The Write Stuff is already impressive, and version 2 is sure to give the "big boys" a real run for their money. ■

Michael Cavanaugh, a field supervisor for the Pennsylvania Bureau of Standard Weights and Measures, enjoys photography, canoeing and bicycling when not absorbed in using his extensive Commodore system.

Table 2. Distributors and prices.

PaperClip III
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
C-64, C-128
$49.95

FontMaster 128
Xetec, Inc.
2804 Arnold Rd.
Salina, KS 67401
C-128
$69.95

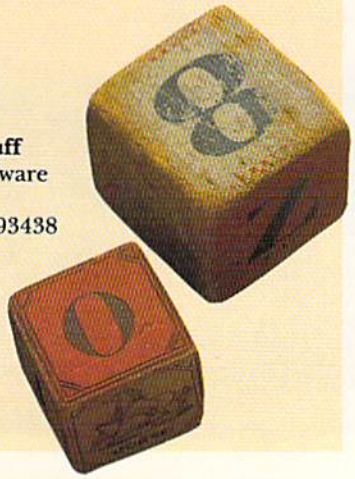
SpellMaster 128
C-128
$10.00

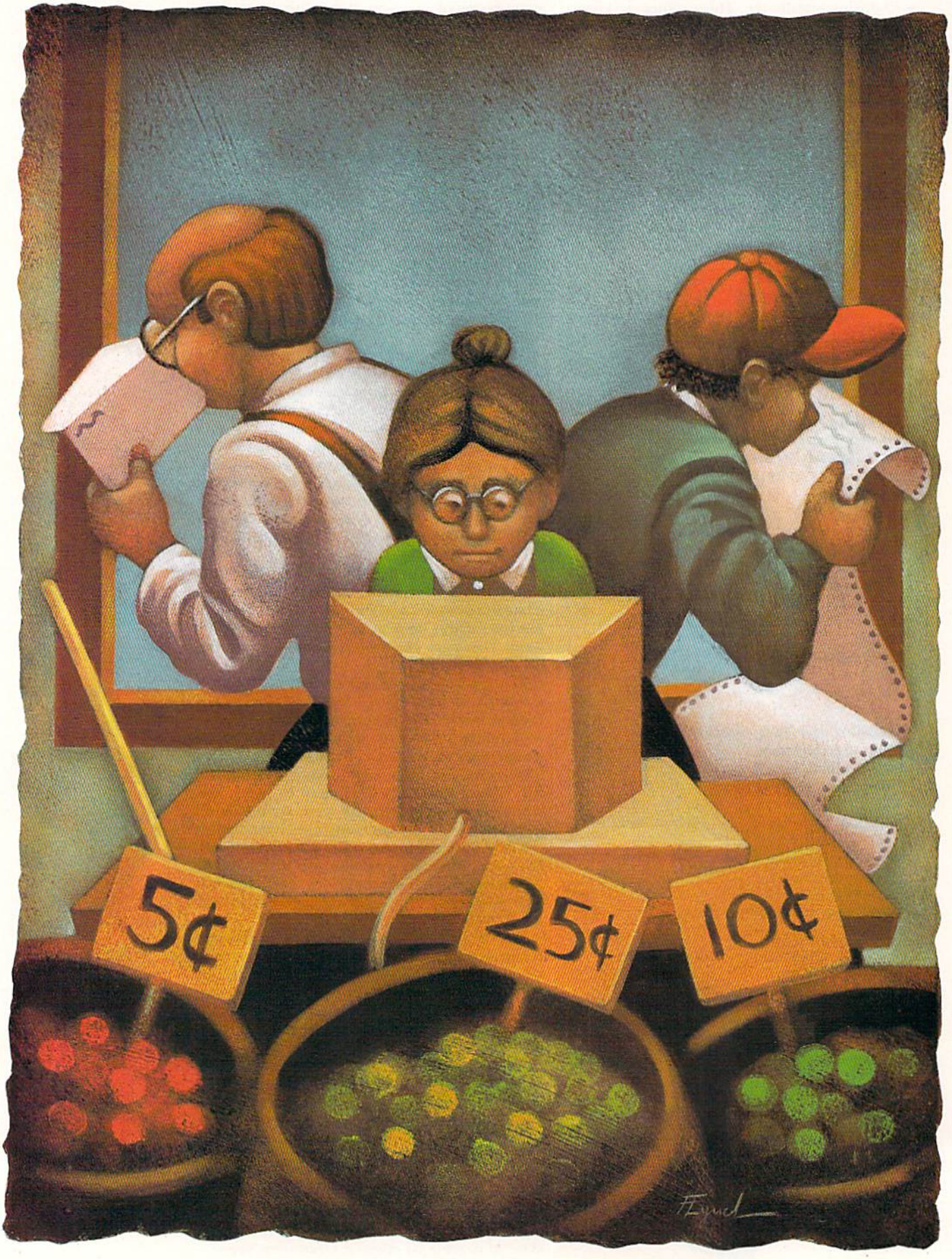
WordPro with Turbo Load and Save
Spinnaker Software
One Kendall Square
Cambridge, MA 02319
C-64
$39.95

geoWrite Workshop 128
Berkeley Softworks
2150 Shattuck Ave.
Berkeley, CA 94704
C-128
$69.95

geoSpell
C-64
$29.95

The Write Stuff
Busy Bee Software
PO Box 2959
Lompoc, CA 93438
C-64
$24.95





ILLUSTRATED BY FRED LYNCH

Form Writer

Design and print out personalized forms for all your small-business and family needs.

By TOM BROWN

If your family, small business or club runs on a limited budget, you can save money by using Form Writer on the C-64 or 128 (in 40-Column mode) to create single-page forms for many purposes—letters, invoices, questionnaires, membership records, and so on. The program allows you to print custom-designed forms, containing fields that you can fill in by using the keyboard or the program's document-oriented database.

Each form contains 50 lines, each with 80 characters, and you can prefix any line with one of nine print codes, allowing condensed, italic or double-sized type. Because these codes are defined in the Basic portion of the program, you can easily customize them to suit your needs. There's even provision to send up to ten nonprintable characters to the printer, so you can send special printer codes within lines.

First Steps

C-64 users must type in Listing 1, using *RUN*'s Checksum, but must not type in any lines shaded in red, which are for the C-128 version only. C-128 users must type in Listing 1 in its entirety. After saving Listing 1 to disk, C-64 users must type in Listing 2, save it to the disk that contains Listing 1, and then run it, while C-128 users must type in, save and run Listing 3. Both Listing 2 and Listing 3 write machine language Editor files to disk that are subsequently read in by Form Writer for use when you are working with the program.

Once you've typed in the listings, be sure to run the C-128 version in 40-Column mode. When the program is activated, it first prompts you to enter the month and day, to be used when there's a date field in your document. Next, the program checks the disk drive, so all future disk operations default to that drive. You can easily change the drive by using the Disk Drive option on the main menu.

Creating and Editing Blank Forms

After the preliminaries, you're ready to create a blank form. On this form, you'll place the text, which won't change from document to document, and the form fields, which will.

At the main menu, select option 1, the Form Editor. It will take you to the Form/Field menu, where you should select option 1 again, to create a new form. This selection erases any old form in memory. If, instead of creating a new form, you want to edit the one currently in memory, choose option 2 at the Form/Field menu.

The editor functions within a 40-column window on an 80-column by 50-line page. Using the cursor keys, you can move this window to cover any area on the page.

Whenever you enter the editor, you'll find the blinking cursor in the first column on the first line. At the bottom of the screen there's a status line that shows the position of the cursor in the 80-column form (not in the 40-column window). Both lines and columns are numbered starting at zero. As you type characters or use the cursor keys, the status line updates automatically. You'll find this handy for keeping tabs on the cursor's location when it's traveling a distance on the page and seems to vanish. Forms can scroll horizontally in the window as far as the 80th column (column number 79), which represents the edge of the paper.

As you're working, press the return key to advance the cursor to the beginning of the next line. To move the cursor right several spaces, press the tab key on the C-128 or control/I on the C-64. The insert and delete keys operate in the normal fashion, but affect the entire 80-column line, not just the 40 columns in the window. *Don't* use the insert key when the cursor is in the first column of any line. Also, the home key sends the cursor to the top of the form, not the top of the window.

To erase the screen on the C-128, press the alt key along with clear-screen (shift/home). On the C-64, clear-screen doesn't work at all; you must go back to the Form/Field menu and select option 1 (create a new form).

To exit the editor, use the escape key on the C-128 or the F1 key on the C-64.

Creating Fields

To create a field anywhere on your form, define its start and end positions by pressing the up-arrow key where the first and last characters will be. Unpaired up-arrows are ignored. The program allows a maximum of 256 fields on a page, but memory limitations will undoubtedly lower that number, particularly with the C-64.

Use the left-arrow character to direct Form Writer to follow one of the special printer code sequences in line 6 of the listing. The program defaults to printing "hello" when it encounters this character, but, if you change line 6, it will print whatever you wish, within limits. The printer code cannot include more than ten characters, nor can it contain any zeroes. A CHR$(0) is required at the end. The CHR$(0) is not ►

RUN it right: **C-64; C-128 (40-Column mode)**

sent to the printer, but is used by Form Writer to locate the end of the printer code.

Only one code sequence can be used at a time in a document, but it can appear as many times as you wish. Don't confuse these codes with the commands for changing printer fonts that go at the beginning of lines (see Printing, below).

When you exit the editor, it asks if you want to define the fields you've just created. If you're not satisfied with them yet, select option 2 in the Form/Field menu to edit the form currently in memory. Skip that option's erase-form step and go directly to the editor to make your changes. When you exit option 2, you can define the fields you passed over before.

If you opt to leave the editor without creating any fields, you go directly back to the Form/Field menu.

Defining Fields

Once you have entered your fields into the form, the program proceeds through them from top to bottom and left to right on the page, displaying the number of each field (starting at zero), its line and column position and its length, and you must give each field a name. For those fields you'll be filling yourself, as opposed to those the computer will fill, this name should be meaningful, such as Last Name or Address.

After you've named the field, you must specify the type of data it will hold, using the following list of ten possibilities:

Alphanumeric: Any printable character, including numbers, but the field cannot be used for calculations.

Sum1, Sum2 and **Sum3:** Numeric values, which will be added into three subtotals.

Total1, Total2 and **Total3:** Numeric values—these fields hold the subtotals of the three Sum fields listed above.

Grand Total: Numeric value—the total of the Total fields above. If you wish to subtract any Total field from the others in reaching the Grand Total, enter negative values in the appropriate Sum fields.

Keyboard: Data typed in by the user at the time of printing.

Date: The date you type in when you run Form Writer.

Data to fill Alphanumeric, Sum and Keyboard fields is entered by the user. Data for all the other types of fields is entered automatically by the computer when you print your document.

Be aware that you can't use the editor to preview a filled-out document before printing. Prior to printing, the blank form is copied to another area of memory (with the original left intact) where its fields are filled. The editor cannot view that area.

Should you want to abort defining fields—if, for example, you gave the last field the wrong name or type—press return at any field-name prompt to exit to the Form/Field menu.

Creating the Database

After you've defined all your fields, Form Writer presents the name of each one and asks in what order you want the program to prompt you to fill them in, because it's seldom convenient to do so in the same order the program numbers them. For example, the form may have a person's last name listed before his or her first name, but the reverse order would be easier to key in. There's no error-checking here. If you enter the same priority for two or more fields, only the lowest-numbered field with that priority will be used; the database will skip over the others. Be careful to designate each priority only once, and you'll have no difficulty.

When this step is done, enter a name for your database. The name can be no longer than 15 characters, because the program prefixes it with a slash mark. The slash mark distinguishes database files from document files. Don't enter this slash mark yourself when reading the database back; the program will do it for you.

Saving and Loading the Form

Don't forget to save your form after you've edited it! Also, note that you can use a form with several different databases, but you must be sure to have the correct form loaded into memory before defining fields or printing a document. Saving and loading are done from the Form/Field menu.

Using the Database

Once you've designed your blank form, defined its fields and saved your database to disk, you're ready to use the Database option in the Main menu to view, add, change or delete the user-entered Alphanumeric or Sum fields. If you don't have a database open at this point, the program forces you to open one in order to reach the Database menu. From that menu, you can easily change databases with the Open Database option. The name of the currently open database is listed on the Database menu screen.

To Form Writer, the database is an outline, or template, of the length and type of each field in your blank form. Each record in the database is referred to as a document. Rather than use relative files, which would be slow and awkward in this application, each document is stored in a sequential file. These files are very small and easily copied (using appropriate software) to backup disks or transmitted via modem. They also give you the advantage of naming each document, rather than dealing with it as a record number.

Deleting a document involves nothing more than scratching its sequential file. The program pauses and tells you to hit "any key to continue," after listing the Files Scratched message. The Edit Document option displays the same message, since it deletes the old document before saving the new one.

Disk Drive Help

It's virtually impossible to remember the filenames for a whole collection of databases, documents and forms, so you need to have access to your disk directory as you're using Form Writer. When you're in the middle of working on something, you can view the directory by entering a dollar sign as the filename at many filename prompts. Then, after you're done, the program returns you to the same prompt.

At those times when you're free to go to the Main menu, you can view the directory through the Disk Drive option, which provides access to the disk drive error channel, as well. Drive commands are standard DOS Wedge commands, only you can omit the @ at the beginning. Entering a number higher than 7 instead of a disk command changes the default drive setting. Since the program defaults to the drive it was loaded from, you can use this option to change to another drive (or even the RAM DOS!) for your data storage.

Printing

When it comes time to print out your form, choose the Printer option in the Main menu. If you haven't opened a database and loaded a form at this point, the program will ask you to do so. There are also menu options to change the database and form.

You can print a form using a document from your database, or you can enter the information from the keyboard (but only information that would normally be stored in the database). There's another option for printing out a form with the fields left blank, so you can fill them in by hand. In this case, the fields are printed with dotted lines. Remember to leave enough vertical spacing in the blank form to give your penmanship room to breathe. ►

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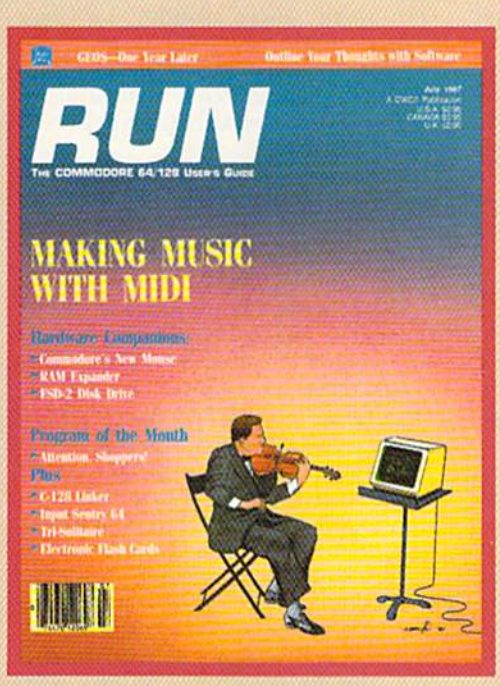

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Before you print out your form, there's one last thing you might want to do: Call on some of your printer's special effects to create a more professional look. You can use Commodore graphics characters (if your printer or interface permits it), but perhaps you'd like to use italic, double-width or condensed characters. Select the Set Printer option from the Printer menu, then enter your printer codes. This is also where you can change the printer device numbers and secondary addresses.

Note that two printer files are opened for printing, one of which has a default secondary address of 7 for printing lowercase letters. This is the channel that each line of the form is sent through. The other channel is opened to secondary address 5, which, on most printer interfaces (such as the Cardco and Xetec), lets you send printer command codes without fear that the interface will think they're regular characters and translate them. You can change one or both secondary addresses, depending on your system and your needs.

Next, you get a chance to define a printer code to be sent at the start of each line. The default codes are for the Gemini 10X. All you have to do is change the code, plus the prompt on the line beside it, to match your system's capabilities. This code applies only to the line in question.

As you type in Form Writer, have your printer manual handy, because some of the Gemini 10X commands may not be available on your printer. On the Gemini 2, for example, the italic character set has been replaced with a near-letter-quality (NLQ) font. In most cases, however, all you need to do is change the codes that perform each task. If you own an Epson MX-80-compatible printer, you may find a minimum number of changes necessary. If yours is an exotic printer, you may have to perform major surgery to achieve special effects.

The printer commands are sent to the printer at the start of each line along the transparent secondary printer channel. Printer commands you send using the left-arrow character embedded in your form, on the other hand, are sent along the text channel, so they may be translated by your interface into true ASCII. Keep that in mind when changing the Form Writer listing.

One warning about embedded code: If you send a string of printable characters, the line printed will be longer than 80 characters. This is of no concern when you're printing in Condensed mode, sending *non*printing control characters to activate a special effect or sending a code that prints a single printing character (such as a user-defined character).

As I mentioned earlier, the embedded codes are located in line 6 of the program listing. The ten codes you can elect to send at the start of a line are located in lines 2820–2830.

The program always prints 80 characters to a line, so, if you plan to use an enlarged character size, remember to make the line shorter! There's no way to make a line longer than 80 characters to take advantage of smaller character sizes. The default printer codes reset the printer at the start of each line, so any special formatting must be done for each line individually.

When you're done defining your specially formatted lines, press return at the Select Line prompt to go back to the Set Printer menu. At this point, I'd suggest that you *save* the printer codes you've defined, because printer codes are erased whenever you open a database.

You can use a pattern of printer codes with more than one database, just as you can use a database with more than one blank form (and vice versa). The Set Printer menu also lets you erase all printer codes in memory (as is done when you choose to set the codes) and load a set of codes you've previously defined. Saving printer codes also saves the printer device number and secondary address. Press return to go back to the Printer menu.

When you finally get around to printing your form, you can specify the number of lines to print, which is handy if the form is shorter than a full page. You can also print several copies without going back to the Printer menu.

Parts of the printing process are slow, particularly if you have a lot of fields to be generated. This is partially due to the fact that the field contents must be padded with spaces before being sent to the form. A little patience here goes a long way.

Technical Notes

The C-64 version of Form Writer uses the area under the Basic ROMs to hold the blank form, while the C-128 version uses the hi-res screen area. Lines 65–67 of the listing may seem strange: They undimension all arrays in memory (without losing any other variables!) whenever you open a database. In this way, smaller databases can have smaller arrays, and so take up less memory. Saving memory is unimportant on the C-128, but on the C-64 it eliminates a lot of needless delay due to garbage collection. R

Tom Brown is a freelance programmer with both public domain and commercial programs to his credit. He recently authored RUN*'s telecommunications program, RUN Term 128.*

Listing 1. Form Writer program.

```
1Ø BANK15:C6=1:REM C128 ONLY
                              :REM*49
2Ø POKE53281,1:POKE5328Ø,1:IFPE
   EK(787)=123THENGOSUB125Ø:GOT
   O61Ø                       :REM*159
3Ø IFPEEK(787)=234THENPOKE787,1
   23:C6=PEEK(1Ø23):GOTO198Ø
                              :REM*5Ø
4Ø POKE1Ø23,C6:IF(C6=Ø)THENPOKE
   55,Ø:POKE56,154:CLR :REM*199
5Ø GOTO118Ø                   :REM*131
6Ø DATA 72,69,76,76,79,Ø,Ø,Ø,Ø,
   Ø                          :REM*134
7Ø RESTORE:FORX=ØTO9:READA:POKE
   (ML+25+X),A:NEXT:RETURN
                              :REM*199
8Ø X=PEEK(53281):POKE53281,Ø:PR
   INT"{SHFT CLR}":POKE53281,X:
   RETURN                     :REM*29
9Ø PRINT:PRINT"{CRSR DN}HIT ANY
    KEY TO CONTINUE"    :REM*174
1ØØ GETA$:IFA$=""THEN1ØØ
                              :REM*173
11Ø RETURN                    :REM*252
12Ø PRINT"{SHFT CLR}{CTRL 4}"+C
   HR$(142)"{4 SPACEs}{SHFT U}
   {8 SHFT *s}{COMD R}{21 SHFT
    *s}{SHFT I}        :REM*16Ø
13Ø PRINT"{4 SPACEs}{SHFT -}{8
   SPACEs}{SHFT -} {CTRL 7}{CO
   MD A}{17 SHFT *s}{COMD S}{C
   TRL 4} {SHFT -}     :REM*113
14Ø PRINT"{4 SPACEs}{SHFT -}{8
   SPACEs}{SHFT -}{CTRL 7}{COM
   D A}{COMD X}{CTRL 3}{CTRL 9
   }{17 SPACEs}{CTRL Ø}{CTRL 7
   }{COMD Z}{COMD S}{CTRL 4}{S
   HFT -}              :REM*25Ø
15Ø PRINT"{4 SPACEs}{SHFT -}{8
   SPACEs}{SHFT -}{CTRL 7}{SHF
   T -}{CTRL 3}{CTRL 9}{19 SPA
   CEs}{CTRL Ø}{CTRL 7}{SHFT -
   }{CTRL 4}{SHFT -}    :REM*29
16Ø PRINT"{4 SPACEs}{SHFT -}{8
   SPACEs}{SHFT -}{CTRL 7}{COM
   D Z}{COMD S}{CTRL 3}{CTRL 9
   }{17 SPACEs}{CTRL Ø}{CTRL 7
   }{COMD A}{COMD X}{CTRL 4}{S
   HFT -}              :REM*134
17Ø PRINT"{4 SPACEs}{SHFT -}{8
   SPACEs}{SHFT -} {CTRL 7}{CO
   MD Z}{17 SHFT *s}{COMD X}{C
   TRL 4} {SHFT -}     :REM*1Ø5
```

Continued on p. 80.

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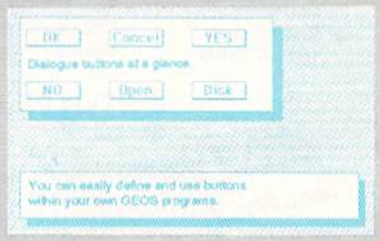

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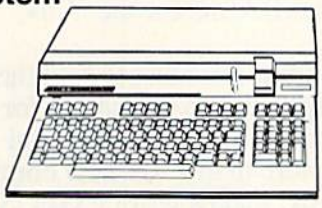

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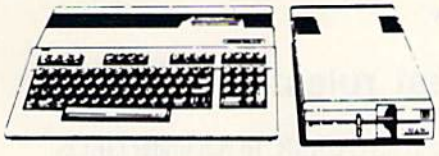

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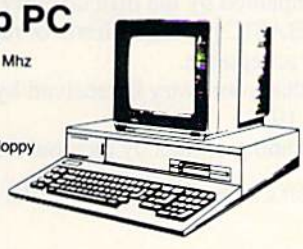

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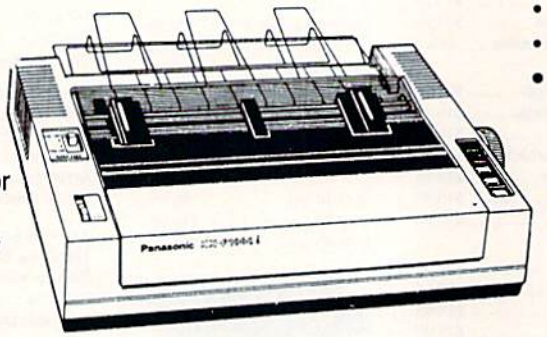

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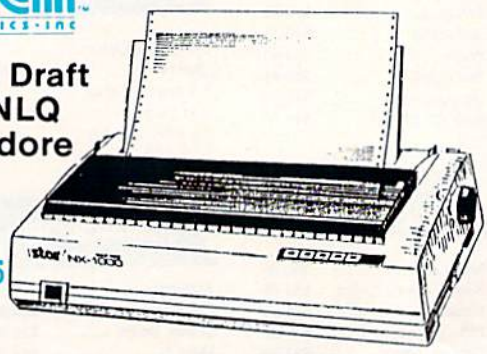

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Mark "Mac" Bowser, Sales Manager

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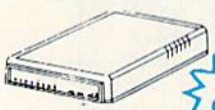

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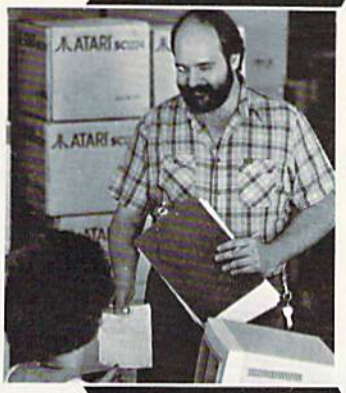

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Special Delivery

Rain, sleet, hail and dark of night. . . ; in this text and graphics adventure game, you'll confront even more threatening obstacles.

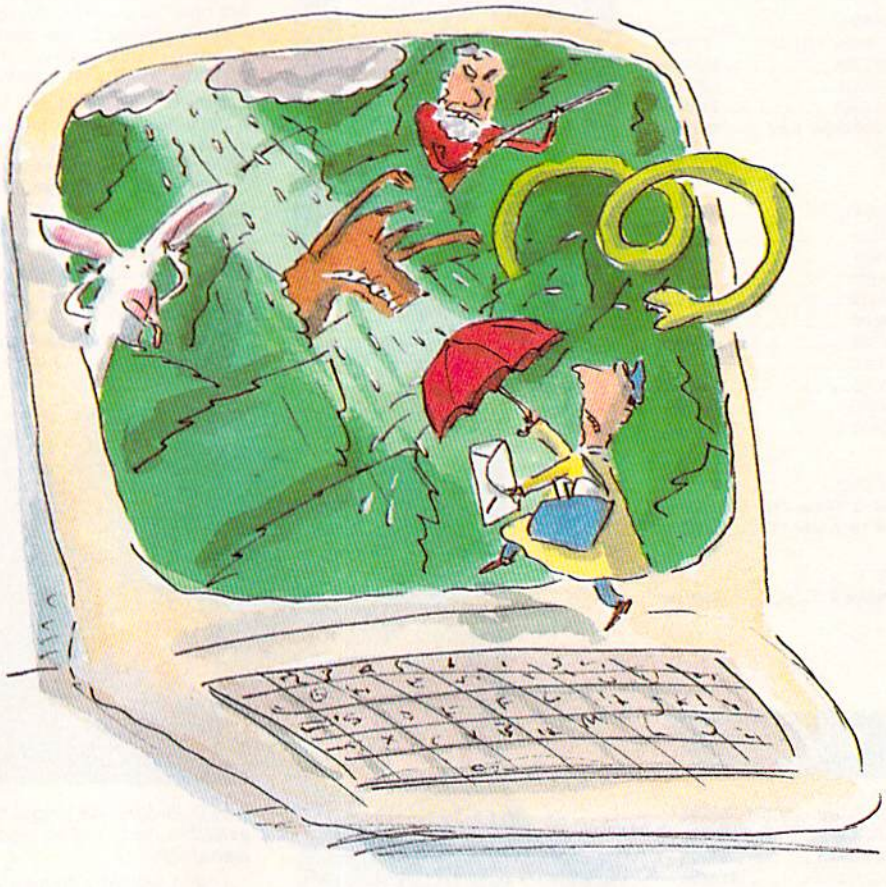
By CINDY HURLEY

In Special Delivery, you are a dedicated postman, charged with carrying a special delivery letter to the crazy hermit who lives in the woods. To complete your assignment, you must evade a threatening snake, a booby trap, a persistent dog and a mettlesome rabbit. You must also take care to prevent the rain from soaking the letter. The final obstacle is the crazy old man himself, who might shoot you if he's in a bad mood.

The game can understand two-word inputs and has a dictionary of over 30 words. You may visit 20 different locations, and take and drop various objects, including the special delivery letter. The game responds to whatever you type with an appropriate comment, ranging from "I don't understand" to "I see no mailbox here."

This is a nonviolent adventure, in that you can't kill anything. On the other hand, *you* can be killed if you're careless. Therefore, you must use all your wits to overcome the obstacles; tools to help are scattered throughout the woods. If you fail, just start the game over and try again. Good luck! R

Cindy Hurley, a microbiologist, teacher, writer and former small-business owner, is also a computer programmer who specializes in adventure games.



Listing 1. Special Delivery program.

```
Ø REM SPECIAL DELIVERY BY C.G.H
  URLEY SEPT 1987        :REM*125
1Ø GOSUB241Ø:GOTO53Ø     :REM*18Ø
2Ø POKEV+21,Ø:POKEV+16,Ø:GOSUB1
   45Ø:IFTH(Ø)<2GOTO11Ø:REM*247
3Ø FORX=ØTO24:POKES5+X,Ø:NEXT
                         :REM*75
4Ø IF(RND(1)*1ØØ)>6ØGOTO11Ø
                         :REM*128
5Ø POKE5328Ø,Ø:POKE53281,Ø:FORX
   =1TO1ØØ:NEXT:POKE53281,1:POK
   E5328Ø,1              :REM*1Ø4
6Ø FORX=1TO1ØØ:NEXT:FORX=15TO1S
   TEP-1:POKES5,2ØØ:POKES4,4Ø:P
   OKES3,15              :REM*233
7Ø POKE5328Ø,Ø:POKE53281,Ø:POKE
   S1,X                  :REM*9Ø
8Ø POKES2,129:NEXT:POKES2,128
                         :REM*27
9Ø IFRM(Ø)=7THENPOKE5328Ø,12:PO
   KE53281,12:GOTO11Ø    :REM*2Ø4
1ØØ POKE53281,3:POKE5328Ø,3
                         :REM*218
11Ø PRINTP$              :REM*17
12Ø PRINT"{CTRL 7}"RM$((RM(Ø)-1
    ),Ø)"{CTRL 1}":IFAV(RM(Ø)-1
    )=1THENGOTO14Ø       :REM*39 ►
```

RUN it right: **C-64**

ILLUSTRATED BY LAURA CORNELL

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You will also notice a few very cheap 1200s on the market at "too good to be true prices." They are. The reason is that they are not truly Hayes and Commodore 1670® compatible therefore not usable in all situations and with all serivces.

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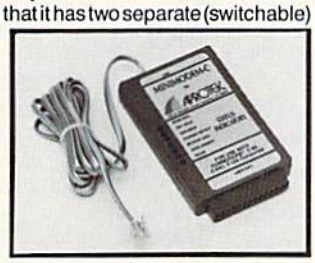

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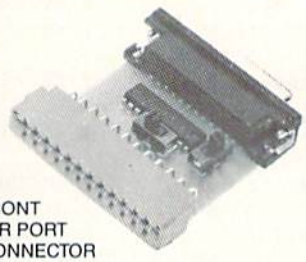

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SPECIAL DELIVERY

```
13Ø PRINTRM$((RM(Ø)-1),1)
                        :REM*152
14Ø IFRM(Ø)=1THENPRINT"THERE IS
    A CLOSED GATE TO THE NORTH
    ."                  :REM*61
15Ø PRINT"{CTRL 9}YOU MAY GO{CT
    RL Ø}{2 SPACEs}";:FORZ=ØTO3
    :IFD((RM(Ø)-1),Z)<>ØTHENPRI
    NTD$(Z)" ";         :REM*59
16Ø NEXT:PRINT:FORZ=1TO11:IFTH(
    Z)=RM(Ø)THENPRINTT$(Z-1,Ø)
                        :REM*12
17Ø NEXT:IFTH(3)=RM(Ø)THENGOSUB
    211Ø                :REM*148
18Ø IFTH(8)=RM(Ø)THENGOSUB222Ø
                        :REM*63
19Ø FORZ=1TOLEN(A$)     :REM*131
2ØØ IFMID$(A$,Z,1)<>" "THENNEXT
    :AB$(1)="":AB$(Ø)=A$:RETURN
                        :REM*146
21Ø AB$(1)=MID$(A$,Z+1):AB$(Ø)=
    LEFT$(A$,Z-1):RETURN
                        :REM*1ØØ
22Ø G$=A$+"{5 SPACEs}":A$=LEFT$
    (G$,5):K=Ø:KK=43    :REM*32
23Ø M=INT((K+KK)/2)     :REM*233
24Ø IFA$=W$(M)THENQ=CD(M):RETUR
    N                   :REM*154
25Ø IFA$<W$(M)THENKK=M-1
                        :REM*1Ø3
26Ø IFA$>W$(M)THENK=M+1:REM*198
27Ø IFK=MORKK=MTHENQ=Ø:RETURN
                        :REM*113
28Ø GOTO23Ø             :REM*93
29Ø FORZ=ØTO3:NM(Z)=Ø:NEXT:G$=M
    ID$(STR$(CC),2)     :REM*4
3ØØ FORZ=1TOLEN(G$):NM(Z-1)=VAL
    (MID$(G$,Z,1)):NEXT:RETURN
                        :REM*8
31Ø IFRB(Ø)<5THENRB(Ø)=RB(Ø)+1:
    RETURN              :REM*135
32Ø POKEV+28,PEEK(V+28)OR1
                        :REM*2Ø9
33Ø POKEV+39,11:POKEV+16,1:POKE
    V+37,Ø:POKEV+38,1   :REM*9Ø
34Ø POKEV,65:POKEV+1,15Ø
                        :REM*144
35Ø POKE2Ø4Ø,13:POKEV+21,PEEK(V
    +21)OR1:Z=14        :REM*181
36Ø FORX=65TO25STEP-1:L=Ø:POKEV
    ,X:POKE2Ø4Ø,Z:IFZ=14THENZ=1
    5:L=1               :REM*243
37Ø IFZ=15ANDL=ØTHENZ=14:REM*63
38Ø NEXT                :REM*255
39Ø POKE2Ø4Ø,13         :REM*192
4ØØ RB(1)=RM(Ø)         :REM*94
41Ø PRINT"A LITTLE RABBIT IS FO
    LLOWING YOU!":RETURN
                        :REM*151
42Ø PRINT"SORRY, YOU ARE DEAD."
    :GOTO99Ø            :REM*134
43Ø IFTH(Ø)<2THENTH(Ø)=TH(Ø)+1:
    RETURN              :REM*91
44Ø PRINT"IT IS RAINING."
                        :REM*241
45Ø IFTH(2)=22THENPRINT"LUCKY Y
    OU HAVE A RAIN COAT!":TH(Ø)
    =2:RETURN           :REM*1Ø3
46Ø IFTH(Ø)<5THENTH(Ø)=TH(Ø)+1:
```

```
    RETURN              :REM*13
47Ø PRINT"THE LETTER IS GETTING
     WET NOW."          :REM*42
48Ø IFTH(Ø)<1ØTHENTH(Ø)=TH(Ø)+1
    :RETURN             :REM*32
49Ø PRINT"THE LETTER IS SLOWLY
    MELTING."           :REM*13
5ØØ TH(Ø)=TH(Ø)+1:IFTH(Ø)>14THE
    NPRINT"THE LETTER IS GONE.
    SORRY.":GOTO99Ø     :REM*134
51Ø RETURN              :REM*142
52Ø FORZ=1TO7Ø:POKES2,131
                        :REM*188
53Ø GOSUB2Ø:GOSUB31Ø:GOSUB43Ø
                        :REM*248
54Ø AV(RM(Ø)-1)=1       :REM*73
55Ø PRINTP1$:PRINTS$:PRINTP1$
                        :REM*47
56Ø GETA$:IFA$<>""GOTO55Ø
                        :REM*1Ø5
57Ø INPUT"YOUR MOVE ";A$
                        :REM*229
58Ø GOSUB19Ø:A$=AB$(Ø):GOSUB22Ø
    :CC=Q:GOSUB29Ø:CC=NM(1)+NM(
    Ø)*1Ø               :REM*199
59Ø PRINTS1$            :REM*18Ø
6ØØ IFQ=ØORCC<11THENPRINTC$(6):
    GOTO55Ø             :REM*63
61Ø K=CC-1Ø:IFCC>19THENK=CC-19:
    GOTO63Ø             :REM*3Ø
62Ø ONKGOTO65Ø,74Ø,77Ø,87Ø,91Ø,
    92Ø,93Ø,1Ø3Ø,1Ø5Ø   :REM*8Ø
63Ø ONKGOTO1Ø5Ø,1Ø7Ø,126Ø,134Ø,
    138Ø,139Ø,143Ø,1Ø6Ø :REM*5Ø
64Ø PRINTC$(6):GOTO55Ø  :REM*158
65Ø M=NM(2):FORX=ØTO2:CC=OB(X):
    GOSUB29Ø            :REM*173
66Ø IFRM(Ø)<>NM(3)+NM(2)*1ØTHEN
    NEXT:GOTO71Ø        :REM*232
67Ø IFNM(1)<>MOROB(X)<ØTHENNEXT
    :GOTO71Ø            :REM*115
68Ø PRINTC$(NM(Ø)-1):GOTO55Ø
                        :REM*218
69Ø IFRM(Ø)=NM(3)+NM(2)*1ØTHENI
    FOB(X)>ØTHENPRINTC$(NM(Ø)-1
    ):X=2:NEXT:GOTO55Ø  :REM*46
7ØØ NEXT                :REM*61
71Ø K=D((RM(Ø)-1),M)    :REM*75
72Ø IFK=ØTHENPRINT"YOU CAN'T GO
     THAT WAY!":GOTO55Ø:REM*136
73Ø RM(Ø)=K:GOTO53Ø     :REM*49
74Ø IFRM(Ø)<>1ANDRM(Ø)<>2THENPR
    INT"YOU CAN'T CLIMB HERE.":
    GOTO55Ø             :REM*16
75Ø IFRM(Ø)=1THENRM(Ø)=2:GOTO53
    Ø                   :REM*13Ø
76Ø RM(Ø)=1:GOTO53Ø     :REM*136
77Ø IFAB$(1)=""THENPRINT"GET WH
    AT?":GOTO55Ø        :REM*17Ø
78Ø A$=AB$(1):GOSUB22Ø:IFQ=ØTHE
    NPRINTC$(5):GOTO55Ø:REM*132
79Ø IFQ=3ØORQ=5ORQ=7THENPRINTC$
    (4):GOTO55Ø         :REM*187
8ØØ IFQ>11THENPRINTC$(3):GOTO55
    Ø                   :REM*1Ø7
81Ø IFAV(Ø)>4THENPRINT"YOUR ARM
    S ARE FULL.":GOTO55Ø
                        :REM*184
82Ø IFTH(Q)=22THENPRINT"YOU ALR
    EADY HAVE IT.":GOTO55Ø
                        :REM*29
83Ø IFQ=8THENPRINT"THE DOG BITE
    S YOU AND GIVES YOU RABIES.
    ":GOTO42Ø           :REM*1Ø1
84Ø IFTH(Q)<>RM(Ø)THENPRINT"I D
    ON'T SEE "T$(Q-1,1)" HERE."
    :GOTO55Ø            :REM*75
85Ø IFQ=3THENPRINT"IT BITES! AN
    D, IT'S POISONOUS!":GOTO42Ø
                        :REM*7Ø
86Ø TH(Q)=22:AV(Ø)=AV(Ø)+1:PRIN
    T"OK":GOTO55Ø       :REM*168
87Ø IFAB$(1)=""THENPRINT"DROP W
    HAT?":GOTO55Ø       :REM*156
88Ø A$=AB$(1):GOSUB22Ø:IFQ=ØORQ
    >11THENPRINTC$(5):GOTO55Ø
                        :REM*18
89Ø IFTH(Q)<>22THENPRINT"YOU DO
    N'T HAVE IT.":GOTO55Ø
                        :REM*118
9ØØ TH(Q)=RM(Ø):AV(Ø)=AV(Ø)-1:P
    RINT"OK":GOTO55Ø    :REM*166
91Ø PRINT"YOU HAVE NO WEAPON.":
    GOTO55Ø             :REM*41
92Ø PRINT"NO ONE WILL SAVE YOU.
    ":GOTO55Ø           :REM*243
93Ø IFRM(Ø)=1ORRM(Ø)=2THENPRINT
    "KNOCKING ON THE GATE DOES
    NO GOOD.":GOTO55Ø   :REM*222
94Ø IFRM(Ø)<>2ØTHENPRINT"KNOCKI
    NG ON A TREE IS STUPID!":GO
    TO55Ø               :REM*87
95Ø LL=Ø:IFTH(11)=22GOTO97Ø
                        :REM*14
96Ø PRINT"WHEN YOU KNOCK,THE HE
    RMIT SEES NO LETTERAND SHOO
    TS!":LL=1:GOTO234Ø  :REM*31
97Ø PRINT"WHEN YOU KNOCK AN OLD
     MAN OPENS THE DOORAND TAKE
    S THE LETTER."      :REM*13Ø
98Ø PRINT"YOU HAVE WON THE GAME
    !"                  :REM*64
99Ø PRINT"PLAY AGAIN? (Y/N){2 S
    PACEs}";            :REM*242
1ØØØ GETA$:IFA$<>"Y"ANDA$<>"N"G
     OTO1ØØØ            :REM*4
```

Continued on p. 88.

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Now You See It. . .

. . . now you don't. You're in for a few surprises when you play this deceptively simple adventure-type game.

By PENNY DEGROFF

You pay $30 for a popular arcade game, and, in spending several hours or days playing it, you just can't get past the third level. If this sounds familiar, you'll enjoy playing Now You See It. This game has only eight levels, and Carkey, the main character, is indestructible. All he has to do is walk around inside Tinshor Cave and pick up pieces of yendor, a valuable metallic substance. There are ten pieces of yendor on each of the eight levels. Sounds easy, right?

Wrong! If you've ever been in a cave, you know that the farther you go, the darker it gets. The first level of Now You See It is a cinch. All Carkey has to do is to tour the cave, guided by a joystick in port 2, and pick up the pieces of yendor. As he proceeds, the number in the upper-right corner of the screen displays how many pieces remain.

After collecting all ten pieces, Carkey automatically descends to level 2. Since it's darker there, it's harder to see the passages. If Carkey keeps bumping into walls, press the fire-button. This lights the cave, but it also freezes Carkey in his tracks. Release the fire-button, and the walls disappear again.

All the time that Carkey is moving through the cave, the numbers in the upper-left corner of the screen tell how much time has elapsed. Once the clock starts, it doesn't stop until all eight levels have been completed.

In each of the lower levels, different things or combinations of things are obliterated by the darkness. If this still sounds like an easy game, try to play it in five minutes or less! R

Penny DeGroff is a freelance author and a programmer of educational and arcade games for the C-64.

Listing 1. Now You See It program.

```
10 POKE52,48:POKE56,48:CLR:DIMD
   $(24),PP(8,10),WS(8):D$(0)="
   {HOME}"                  :REM*87
20 FORX=1TO24:D$(X)=D$(X-1)+"{C
   RSR DN}":NEXT:GOTO430
                            :REM*224
30 PRINTD$(1)MID$(TI$,1,2)":"MI
   D$(TI$,3,2)":"MID$(TI$,5,2):
   RETURN                   :REM*240
40 GOSUB30:FB=PEEK(56320)AND16:
   IFFB=16THEN80            :REM*53
50 POKE53280,14:POKE53281,14
                            :REM*84
60 GOSUB30:FB=PEEK(56320)AND16:
   IFFB=0THEN60             :REM*86
70 POKE53280,0:POKE53281,0:GOTO
   40                       :REM*239
80 JS=PEEK(56320)AND15:IFJS=11T
   HENDI=-1:C=1:GOTO130:REM*141
90 IFJS=7THENDI=1:C=3:GOTO130
                            :REM*100
100 C=2:IFJS=14THENDI=-40:GOTO1
   30                       :REM*97
110 IFJS=13THENDI=40:GOTO130
                            :REM*249
120 GOTO40                  :REM*248
130 IFPEEK(OP+DI)=160THENPOKE54
   276,129:POKE54276,128:GOTO4
   0                        :REM*103
140 NP=OP+DI:TN=PEEK(NP):POKENP
   +54272,CC:POKEOP,32:POKENP,
   C:POKEOP+54272,0         :REM*25
150 OP=NP:IFTN=0THEN170      :REM*59
160 GOTO40                  :REM*35
170 POKE54283,17:POKE54283,16:P
   R=PR-1:PRINTD$(1)TAB(38)PR:
   IFPR=0THEN190            :REM*53
180 GOTO40                  :REM*55
190 TT$=TI$:FORDE=1TO1000:NEXT:
   RESTORE:FORX=1TO5:READHI,LO
   :POKE54287,HI            :REM*53
200 POKE54286,LO:POKE54290,17:F
   ORDE=1TO90:NEXT:POKE54290,1
   6:FORDE=1TO50:NEXT       :REM*92
210 NEXT                    :REM*85
220 LE=LE+1:IFLE=9THEN350
                            :REM*20
230 PRINT"{SHFT CLR}":POKE53280
   ,6:POKE53281,2:POKE646,1:PO
   KE53272,(PEEK(53272)AND240)
   OR6                      :REM*121
240 PRINTD$(12)TAB(11)"LEVEL"LE
   "IS NEXT...":FORDE=1TO1000:
   NEXT                     :REM*134 ►
```

RUN it right: **C-64; joystick**

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NOW YOU SEE

```
25Ø ONLEGOSUB57Ø,58Ø,59Ø,6ØØ,61
    Ø,62Ø,63Ø,64Ø:POKE646,MC:PR
    INT"{SHFT CLR}"      :REM*113
26Ø POKE53272,(PEEK(53272)AND24
    Ø)OR12:POKE5328Ø,Ø:POKE5328
    1,Ø:X1=11Ø4:X2=1143 :REM*13
27Ø S=1:GOSUB29Ø:X1=1183:X2=2Ø2
    3:S=4Ø:GOSUB29Ø:X1=2Ø22:X2=
    1984:S=-1:GOSUB29Ø  :REM*227
28Ø X1=1944:X2=1144:S=-4Ø:GOSUB
    29Ø:GOTO3ØØ         :REM*158
29Ø FORX=X1TOX2STEPS:POKEX,16Ø:
    POKEX+54272,15:NEXT:RETURN
                        :REM*129
3ØØ RN=INT(RND(1)*8)+1:IFWS(RN)
    =1THEN3ØØ           :REM*12Ø
31Ø WS(RN)=1:ONRNGOSUB65Ø,74Ø,7
    6Ø,81Ø,83Ø,89Ø,96Ø,1Ø2Ø
                        :REM*92
32Ø FORX=1TO1Ø:POKEPP(RN,X),Ø:P
    OKEPP(RN,X)+54272,PC:NEXT:O
    P=1945              :REM*141
33Ø POKEOP,2:POKEOP+54272,CC:PO
    KE646,1:PR=1Ø:PRINTD$(1)TAB
    (37)PR:TI$=TT$      :REM*124
34Ø GOTO4Ø              :REM*215
35Ø FORDE=1TO1ØØØ:NEXT:PRINT"{S
    HFT CLR}":POKE53272,(PEEK(5
    3272)AND24Ø)OR4:POKE646,Ø
                        :REM*148
36Ø POKE5328Ø,12:POKE53281,15:P
    RINTD$(9)TAB(15)"GAME OVER"
                        :REM*23Ø
37Ø PRINTD$(12)TAB(9)"TIME THIS
     GAME--"MID$(TT$,1,2)":"MID
    $(TT$,3,2)":";      :REM*134
38Ø PRINTMID$(TT$,5,2):IFTT$<BT
    $THENBT$=TT$        :REM*175
39Ø PRINTTAB(14)"BEST TIME--"MI
    D$(BT$,1,2)":"MID$(BT$,3,2)
    ":"MID$(BT$,5,2)    :REM*1Ø
4ØØ PRINTD$(15)TAB(4)PA$:FORDE=
    1TO1ØØ:NEXT:FB=PEEK(5632Ø)A
    ND16:IFFB=ØTHEN42Ø  :REM*225
41Ø PRINTD$(15)TAB(4)BL$:FORDE=
    1TO1ØØ:NEXT:GOTO4ØØ:REM*13Ø
42Ø TT$="ØØØØØØ":LE=Ø:FORX=1TO8
    :WS(X)=Ø:NEXT:GOTO22Ø
                        :REM*191
43Ø FORX=54272TO54295:POKEX,Ø:N
    EXT:POKE54296,15:T1$="NOW Y
    OU SEE IT"          :REM*157
44Ø T2$="{14 SPACEs}":PA$="PRES
    S FIRE BUTTON TO PLAY AGAIN
    ":BL$="{CTRL 9}"+PA$:REM*87
45Ø BT$="235959":PRINT"{SHFT CL
    R}":POKE5328Ø,2:POKE53281,2
    :POKE646,15:POKE54277,9
                        :REM*83
46Ø POKE54284,96:POKE54291,9:FO
    RX=1TO11:RO=INT(RND(1)*24):
    CO=INT(RND(1)*25)   :REM*146
47Ø PRINTD$(RO)TAB(CO)T1$:READH
    I,LO:FORZ=54273TO54287STEP7
    :POKEZ,HI:POKEZ-1,LO
                        :REM*139
48Ø NEXT:POKE54276,33:POKE54283
    ,33:POKE5429Ø,17:FORDE=1TO9
    Ø:NEXT:POKE54276,32:REM*181
49Ø POKE54283,32:POKE5429Ø,16:P
    RINTD$(RO)TAB(CO)T2$
                        :REM*129
5ØØ NEXT:POKE646,7:PRINTD$(12)T
    AB(13)T1$:POKE54277,1Ø:POKE
    54278,3:POKE54273,1Ø
                        :REM*182
51Ø POKE54272,1Ø:POKE54284,25:P
    OKE54285,9:POKE5428Ø,51:POK
    E54279,97           :REM*251
52Ø FORZ1=1TO8:FORZ2=1TO1Ø:READ
    PP(Z1,Z2):NEXT:NEXT:POKE563
    34,PEEK(56334)AND254
                        :REM*191
53Ø POKE1,PEEK(1)AND251:X1=384:
    X2=471:GOSUB56Ø:X1=256:X2=2
    63:GOSUB56Ø:X1=128Ø:REM*195
54Ø X2=1287:GOSUB56Ø:POKE1,PEEK
    (1)OR4:POKE56334,PEEK(56334
    )OR1:FORX=ØTO31     :REM*67
55Ø READD:POKE12288+X,D:NEXT:GO
    TO42Ø               :REM*71
56Ø FORX=X1TOX2:POKE12288+X,PEE
    K(53248+X):NEXT:RETURN
                        :REM*139
57Ø CC=1:PC=7:MC=15:RETURN
                        :REM*253
58Ø CC=1:PC=7:MC=Ø:RETURN
                        :REM*214
59Ø CC=1:PC=Ø:MC=15:RETURN
                        :REM*15Ø
6ØØ CC=Ø:PC=7:MC=15:RETURN
                        :REM*211
61Ø CC=1:PC=Ø:MC=Ø:RETURN
                        :REM*241
62Ø CC=Ø:PC=Ø:MC=15:RETURN
                        :REM*14Ø
63Ø CC=Ø:PC=7:MC=Ø:RETURN
                         :REM*33
64Ø CC=Ø:PC=Ø:MC=Ø:RETURN
                        :REM*239
65Ø PRINTD$(4);:FORX=1TO19:PRIN
    T"{CTRL 9}"SPC(2)" "SPC(34)
    " ":NEXT:PRINTD$(6);
                        :REM*253
66Ø FORX=1TO15:PRINT"{CTRL 9}"S
    PC(4)" "SPC(3Ø)" ":NEXT:PRI
    NTD$(8);:FORX=1TO11 :REM*85
67Ø PRINT"{CTRL 9}"SPC(6)" "SPC
    (26)" ":NEXT:PRINTD$(1Ø);:F
    ORX=1TO7            :REM*225
68Ø PRINT"{CTRL 9}"SPC(8)" "SPC
    (22)" ":NEXT:PRINTD$(12);:F
    ORX=1TO3            :REM*92
69Ø PRINT"{CTRL 9}"SPC(1Ø)" "SP
    C(18)" ":NEXT:PRINTD$(1Ø);:
    FORX=1TO7           :REM*74
7ØØ PRINT"{CTRL 9}"SPC(12)" "SP
    C(14)" ":NEXT:PRINTD$(8);:F
    ORX=1TO11           :REM*49
71Ø PRINT"{CTRL 9}"SPC(14)" "SP
    C(1Ø)" ":NEXT:PRINTD$(6);:F
    ORX=1TO15           :REM*234
72Ø PRINT"{CTRL 9}"SPC(16)" "SP
    C(6)" ":NEXT:PRINTD$(4);:FO
    RX=1TO19            :REM*64
73Ø PRINTSPC(18)"{CTRL 9}{4 SPA
    CEs}":NEXT:RETURN   :REM*2Ø9
74Ø FORX=4TO22STEP2:PRINTD$(X)S
    PC(2)"{CTRL 9}{36 SPACEs}"
                        :REM*75
75Ø NEXT:FORX=5TO21STEP2:PRINTD
    $(X)SPC(19)"{CTRL 9}{2 SPAC
    Es}":NEXT:RETURN    :REM*39
76Ø PRINTD$(7)SPC(1Ø)"{CTRL 9}{
    8 SPACEs}{4 CRSR RTs}{8 SPA
    CEs}":FORX=1TO11:PRINTSPC(1
    7)"{CTRL 9} {4 CRSR RTs} "
                        :REM*22Ø
77Ø NEXT:PRINTSPC(1Ø)"{CTRL 9}{
    8 SPACEs}{4 CRSR RTs}{8 SPA
    CEs}":PRINTD$(8);:FORX=1TO5
                        :REM*4Ø
78Ø PRINTSPC(1Ø)"{CTRL 9} "SPC(
    18)" ":NEXT:PRINTD$(14);:FO
    RX=1TO5             :REM*219
79Ø PRINTSPC(1Ø)"{CTRL 9} "SPC(
    18)" ":NEXT:PRINTD$(12)SPC(
    18)"{CTRL 9} {2 CRSR RTs} "
                        :REM*54
8ØØ PRINTD$(14)SPC(18)"{CTRL 9}
    {2 CRSR RTs} ":RETURN :REM*11
81Ø FORX=4TO22:PRINTD$(X)SPC(19
    )"{CTRL 9} ":NEXT    :REM*Ø
82Ø PRINTD$(13)"{2 CRSR RTs}{CT
    RL 9}{36 SPACEs}":RETURN
                        :REM*36
83Ø PRINTD$(4)SPC(5)"{CTRL 9}{3
     SPACEs}{6 CRSR RTs}{3 SPAC
    Es}{6 CRSR RTs}{3 SPACEs}{6
     CRSR RTs}{3 SPACEs}":FORX=
    5TO1Ø               :REM*23Ø
84Ø PRINTD$(X)SPC(5)"{CTRL 9} {
    CRSR RT} {6 CRSR RTs} {CRSR
     RT} {6 CRSR RTs} {CRSR RT}
     {6 CRSR RTs} {CRSR RT} ":N
    EXT:FORX=16TO21     :REM*2Ø4
85Ø PRINTD$(X)SPC(5)"{CTRL 9} {
    CRSR RT} {6 CRSR RTs} {CRSR
     RT} {6 CRSR RTs} {CRSR RT}
     {6 CRSR RTs} {CRSR RT} ":N
    EXT                 :REM*139
86Ø PRINTSPC(5)"{CTRL 9}{3 SPAC
    Es}{6 CRSR RTs}{3 SPACEs}{6
     CRSR RTs}{3 SPACEs}{6 CRSR
     RTs}{3 SPACEs}":FORX=7TO19
                        :REM*245
87Ø PRINTD$(X)SPC(1Ø)"{CTRL 9}{
    2 SPACEs}{7 CRSR RTs}{2 SPA
    CEs}{7 CRSR RTs}{2 SPACEs}"
    :NEXT               :REM*48
88Ø PRINTD$(13)SPC(5)"{CTRL 9}{
    3Ø SPACEs}":RETURN  :REM*63
89Ø PRINTD$(6)SPC(4)"{CTRL 9}{6
     SPACEs}"SPC(2Ø)"{6 SPACEs}
    ":FORX=1TO13        :REM*125
9ØØ PRINTSPC(4)"{CTRL 9} "SPC(3
    Ø)" ":NEXT:PRINTSPC(4)"{CTR
    L 9}{6 SPACEs}"SPC(2Ø)"{6 S
    PACEs}"             :REM*137
91Ø PRINTD$(7)SPC(11)"{CTRL 9}{
    18 SPACEs}"         :REM*178
92Ø PRINTD$(19)SPC(11)"{CTRL 9}
    {18 SPACEs}":FORX=8TO18:PRI
    NTD$(X)SPC(19)"{2 SPACEs}"
                        :REM*88
93Ø NEXT:PRINTD$(8)SPC(6)"{CTRL
     9}{5 SPACEs}"SPC(18)"{5 SP ►
```

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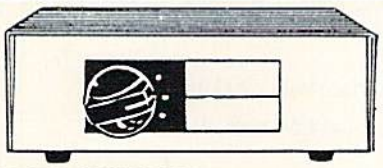

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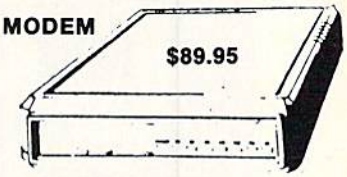

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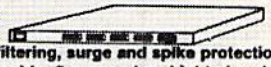

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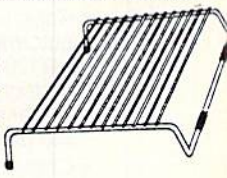

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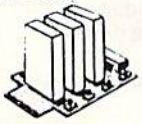

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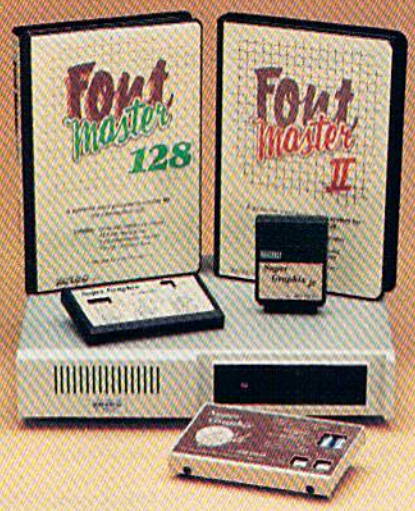

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    ACEs}"                    :REM*122
94Ø PRINTD$(18)SPC(6)"{CTRL 9}{
    5 SPACEs}"SPC(18)"{5 SPACEs
    }":FORX=1ØTO16            :REM*184
95Ø PRINTD$(X)SPC(1Ø)"{CTRL 9}
    "SPC(18)" ":NEXT:RETURN
                              :REM*181
96Ø FORX=1ØTO16STEP3:PRINTD$(X)
    SPC(15)"{CTRL 9}{1Ø SPACEs}
    ":NEXT:FORX=3TO9          :REM*74
97Ø PRINTD$(X)SPC(19)"{CTRL 9}{
    2 SPACEs}":NEXT:FORX=17TO23
    :PRINTD$(X)SPC(19)"{CTRL 9}
    {2 SPACEs}":NEXT          :REM*37
98Ø PRINTD$(6)SPC(1Ø)"{CTRL 9}{
    2Ø SPACEs}"               :REM*1
99Ø PRINTD$(2Ø)SPC(1Ø)"{CTRL 9}
    {2Ø SPACEs}":FORX=7TO12
                              :REM*18
1ØØØ PRINTD$(X)SPC(1Ø)"{CTRL 9}
     "SPC(18)" ":NEXT:FORX=14T
     O19                      :REM*144
1Ø1Ø PRINTD$(X)SPC(1Ø)"{CTRL 9}
     "SPC(18)" ":NEXT:RETURN
                              :REM*72
1Ø2Ø FORX=4TO2ØSTEP4:PRINTD$(X)
     SPC(1Ø)"{CTRL 9}{6 SPACEs}
     {CRSR RT}{6 SPACEs}{CRSR R
     T}{6 SPACEs}"            :REM*251
1Ø3Ø PRINTSPC(11)"{CTRL 9}{4 SP
     ACEs}{3 CRSR RTs}{4 SPACEs
     }{3 CRSR RTs}{4 SPACEs}":P
     RINTSPC(1Ø)"{CTRL 9}{6 SPA
     CEs}{CRSR RT}{6 SPACEs}{CR
     SR RT}{6 SPACEs}"        :REM*132
1Ø4Ø NEXT:RETURN              :REM*182
1Ø5Ø DATA 34,75,4Ø,2ØØ,34,75,4Ø
     ,2ØØ,45,198,54,111,54,111,
     45,198,4Ø,2ØØ,45,198
                              :REM*147
1Ø6Ø DATA 45,198,1474,1493,1634
     ,1653,1561,1566,1547,158Ø,
     1551,1576,1242,1245:REM*16
1Ø7Ø DATA 1882,1885,1553,1574,1
     386,1421,17Ø6,1741,1355,13
     6Ø,1367,1372,1755,176Ø
                              :REM*75
1Ø8Ø DATA 1767,1772,1562,1565,1
     522,1524,16Ø2,16Ø4,1354,13
     73,1754,1773,1545,1582
                              :REM*34
1Ø9Ø DATA 123Ø,1239,1248,1257,1
     87Ø,1879,1888,1897,1548,15
     79,1547,1549,1553,1555
                              :REM*177
11ØØ DATA 1562,1565,1572,1574,1
     578,158Ø,1545,1582,12Ø2,12
     Ø5,136Ø,1367,176Ø,1767
                              :REM*97
111Ø DATA 1922,1925,1234,1253,1
     874,1893,1399,14Ø8,1719,17
     28,1561,1566,Ø,28,54
                              :REM*24
112Ø DATA 34,54,28,Ø,Ø,12,3Ø,12
     ,124,12,2Ø,36,1Ø8,28,54,28
     ,99,28,2Ø,54,Ø,48,12Ø
                              :REM*1Ø7
113Ø DATA 48,62,48,4Ø,36,54
                              :REM*34 ■
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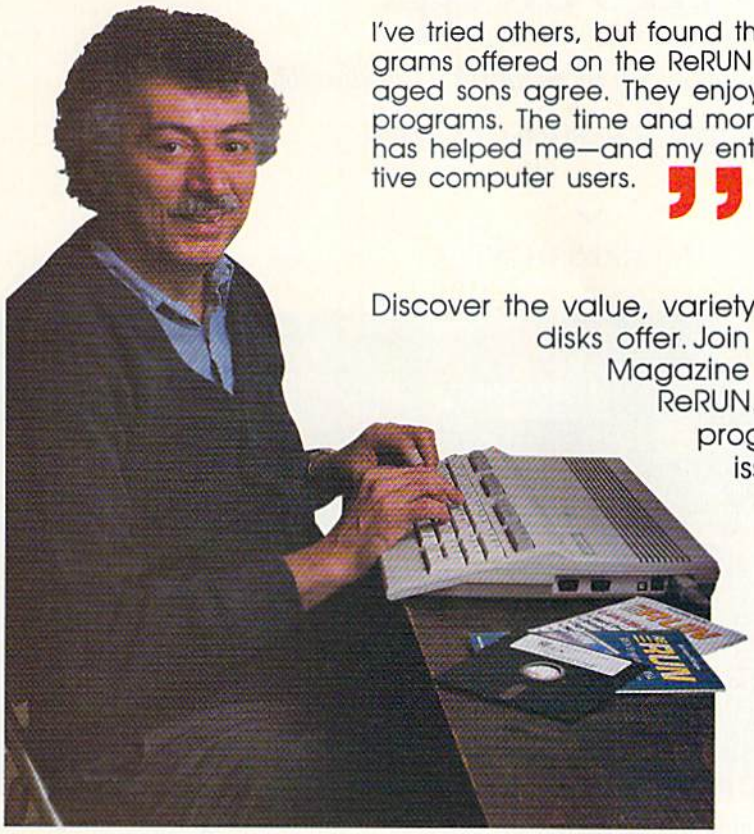

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Unlockup

Got important data locked up in memory? That horrible feeling can largely be locked out for good.

By JAMES HOST

One of the most trying experiences a Commodore 64 user faces is lockup, which, as the word implies, locks up, or freezes, the program in memory. The program refuses every effort on your part to resume running, the run-stop/restore combination has no effect, and the computer doesn't respond to any keypresses. Sometimes a lockup displays the Ready prompt with a flashing cursor, but the computer remains unresponsive to any Basic Direct mode commands.

In any case you're forced to perform one of two actions, and both are unpalatable: reset the computer or turn it off and on again. In either case, you lose the Basic program in memory.

Unlockup gives you both a soft reset and an un-New feature. With Unlockup, you can *usually* recover a Basic program.

Unlocking Unlockup

Although the active portion of Unlockup is written in machine language, the ML is encoded in Data statements. Once you've typed in the program (use *RUN*'s Checksum to catch errors in typing), save a copy before running it, because Unlockup resets the computer during its initialization and will wipe out the Basic program in memory.

When you run Unlockup, it's installed at the top of Basic memory and executes in the background while other programs are running. Load and run other programs as you normally would.

Now you're prepared for any lockup! When it happens, hold down the control key and tap restore. The computer will reset, and the C-64 power-up message will appear (with fewer bytes free, of course), along with the prompt, Do you want to un-New (y/n)?

To recover the Basic program, type Y; you'll see the Load command, but nothing will be loaded. Instead, Basic is working to restore the lost line-links in the program you're recovering. Following the un-New operation, you can list and save your Basic program normally. In fact, if at some time you accidentally type NEW, you can recover your program by hitting control/restore and answering Y to the un-New query.

Other Useful Features

In addition to its crash-recovery features, Unlockup re-enables the stop key and run-stop/restore combination (but is not itself disabled by run-stop/restore) for Basic programs that would otherwise be disabled. You can also set Unlockup's default colors for Basic's Direct mode if you're tired of the C-64's default blue characters, screen and border colors—just change the numbers in the REM Data statements near the end of the Unlockup Basic loader. The current numbers display a dark-gray text, medium-gray border and light-gray background. R

James Host, a freelance programmer and technical writer, wrote educational assembly language programs currently in use on PC clones at a Los Angeles community college.

Listing 1. Unlockup program.

```
Ø REM UN-LOCKUP BY JAMES HOST
                              :REM*41
1Ø POKE 52,127:POKE 56,127:CLR
                              :REM*221
2Ø PRINT "{SHFT CLR}AFTER ACTIV
   ATING "CHR$(34)"UN-LOCKUP"CH
   R$(34)" PRESS"             :REM*182
3Ø PRINT "CONTROL/RESTORE TO RE
   SET YOUR COMPUTER." :REM*229
4Ø RESTORE:PRINT"{CRSR DN}LOADI
   NG ML, PLEASE WAIT..."
                              :REM*23Ø
5Ø J=4Ø4ØØ                    :REM*182
6Ø READ A:IF A>-1 THEN POKE J,A
   :J=J+1:GOTO 6Ø             :REM*136
7Ø SYS 4Ø4ØØ:END               :REM*88
8Ø DATA 12Ø,162,255,154,32,132,
   255,32,135,255,162,2Ø8,16Ø,1
   57,24,32,153               :REM*21Ø
9Ø DATA 255,32,138,255,32,129,2 ►
```

RUN it right: **C-64**

ILLUSTRATED BY MARY JO MAZZELLA

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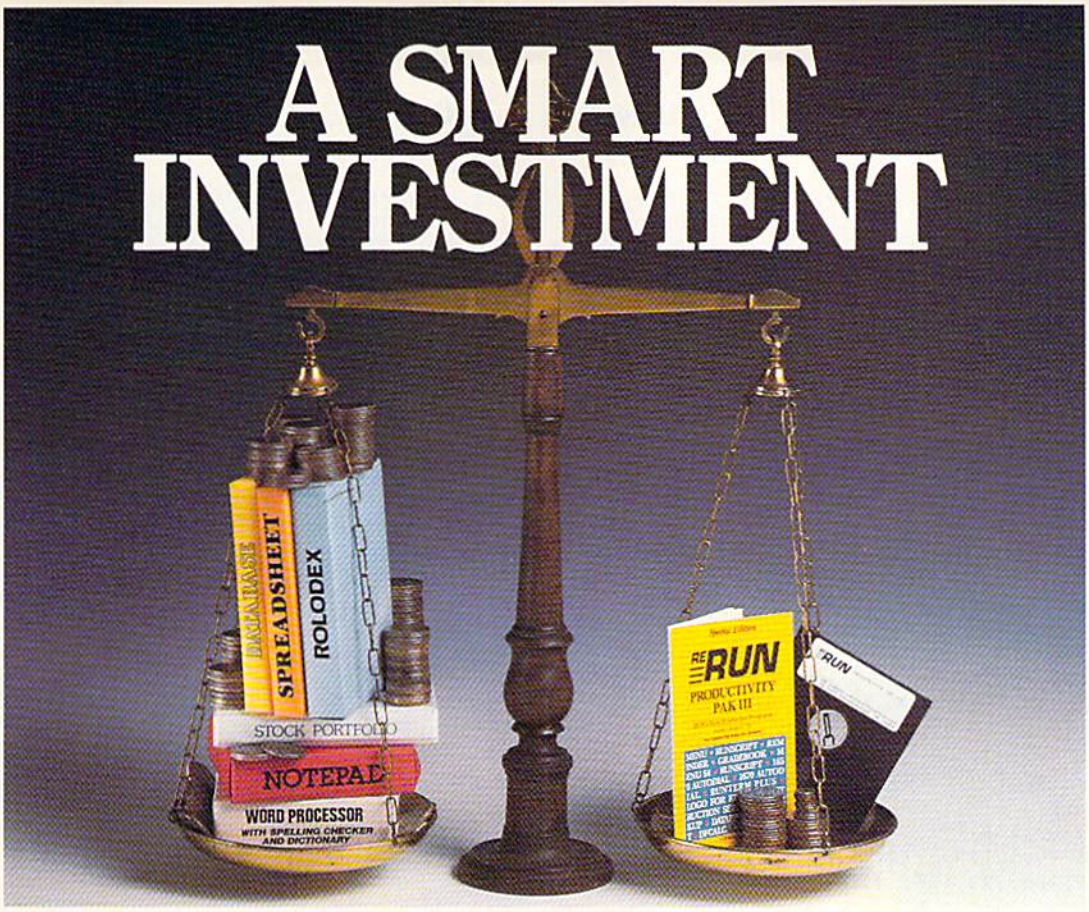

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```
   55,173,192,159,141,134,2,173
   ,193,159,141          :REM*185
100 DATA 32,208,173,194,159,141
    ,33,208,169,8,141,38,3,169,
    158,141,39,3,88      :REM*147
110 DATA 108,0,160,8,120,72,138
    ,72,152,72,32,138,255,173,0
    ,3,141,246,158       :REM*98
120 DATA 173,1,3,141,247,158,16
    9,49,141,0,3,169,158,141,1,
    3,104,168,104        :REM*231
130 DATA 170,104,40,108,38,3,8,
    72,152,72,138,72,32,145,158
    ,160,0,185,155       :REM*70
140 DATA 159,240,6,32,210,255,2
    00,208,245,32,228,255,201,7
    8,240,6,201,89       :REM*171
150 DATA 240,19,208,243,32,210,
    255,169,13,32,210,255,104,1
    70,104,168,104       :REM*34
160 DATA 40,76,212,158,32,210,2
    55,169,13,32,210,255,120,16
    0,0,185,187,159      :REM*174
170 DATA 153,119,2,200,192,5,20
    8,245,132,198,169,108,141,4
    8,3,169,159,141      :REM*133
180 DATA 49,3,169,8,141,1,8,141
    ,2,8,208,203,120,32,138,255
    ,173,38,3,141,33     :REM*171
190 DATA 159,173,39,3,141,34,15
    9,173,40,3,141,5,159,173,41
    ,3,141,10,159        :REM*174
200 DATA 173,24,3,141,106,159,1
    73,25,3,141,107,159,169,248
    ,141,38,3,169        :REM*187
210 DATA 158,141,39,3,169,212,1
    41,0,3,169,158,141,1,3,169,
    0,141,154,159,88     :REM*77
220 DATA 96,8,120,72,169,248,14
    1,38,3,169,158,141,39,3,173
    ,192,159,141,134     :REM*200
230 DATA 2,173,193,159,141,32,2
    08,173,194,159,141,33,208,1
    04,40,76,0,0,8       :REM*217
240 DATA 72,169,43,141,24,3,169
    ,159,141,25,3,169,237,141,4
    0,3,169,246,141      :REM*39
250 DATA 41,3,169,35,141,250,25
    5,141,254,255,169,159,141,2
    51,255,141,255       :REM*38
260 DATA 255,104,40,76,0,0,120,
    72,169,55,133,1,104,64,120,
    72,138,72,152,72     :REM*188
270 DATA 173,154,159,208,46,238
    ,154,159,165,1,72,169,54,13
    3,1,169,127,141      :REM*245
280 DATA 0,220,173,1,220,160,0,
    162,0,205,1,220,208,244,201
    ,251,208,9,200       :REM*23
290 DATA 208,253,232,208,250,76
    ,208,157,104,133,1,140,154,
    159,104,168,104      :REM*241
300 DATA 170,104,76,0,0,32,145,
    158,160,0,132,45,169,8,133,
    46,162,0,177,45      :REM*165
310 DATA 208,7,232,224,3,240,12
    ,208,2,162,0,230,45,208,239
    ,230,46,208,235      :REM*59
320 DATA 230,45,208,2,230,46,16
    6,45,164,46,24,96,30,13,13,
    32,68,79,32,89       :REM*186
330 DATA 79,85,32,87,65,78,84,3
    2,84,79,32,85,78,45,78,69,8
    7,32,40,89,47,78     :REM*225
340 DATA 41,63,0,76,79,65,68,13
                         :REM*250
350 DATA 11:REM TEXT COLOR
                         :REM*8
360 DATA 12:REM BORDER COLOR
                         :REM*173
370 DATA 15:REM BACKGROUND COLO
    R                    :REM*20
380 DATA -1              :REM*238
```

■

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GEOWATCH

Create GEOS applications with geoProgrammer, a new assembly language development system.

By RANDY WINCHESTER

Back in 1986, when most C-64 applications were text-based and disk access was slow, the introduction of the GEOS operating system was a major event. Since 1987, Berkeley has been encouraging programmers to develop their own GEOS applications, but few of the available assemblers have been able to handle the detailed GEOS source code listings, and none of them have been able to produce an entire GEOS application.

To rectify this situation, Berkeley has released geoProgrammer, a scaled-down version of the programming environment in which they designed GEOS. Although it's scaled down, Berkeley claims that geoProgrammer provides nearly all the functions of their own system.

The package, which sells for $69.95, consists of the geoAssembler, geoLinker and geoDebugger programs, sample source code for three GEOS applications and over 400 pages of documentation. Other files on the disk include complete listings of GEOS symbols, constants, routines and macros, as well as a memory map—everything necessary to begin programming.

The immense user's manual, written by Matthew G. Loveless, is exceptional. It clearly covers all the features of the assembler, linker and debugger, leads you step by step through production and debugging of a sample application and provides a 14-page glossary of programming terminology. The index is organized both by subject and alphabetically.

The manual also offers source code files for sample VLIR and sequential applications and a sample desk accessory. These programs, which aren't available from other sources, are included on the disk, too, and you're free to use them as the basis for your own applications.

GEOASSEMBLER

The heart of the geoProgrammer package is geoAssembler, which is responsible for reading assembly language source code and producing relocatable machine language object files. What makes geoAssembler distinctive is its use of resources in the GEOS environment. For instance, source code for geoAssembler is typed in with geoWrite, and all of the word processor's special features, such as various fonts and type styles, are available. Since assembly language is often repetitive, you'll find geoWrite's cut-and-paste functions especially helpful for preparing source code.

Icons and other bitmap images you create with geoPaint can also be added to source code with geoWrite's cut-and-paste functions. Whenever geoAssembler encounters a Photo Scrap, it translates the image into binary data. Incorporating graphics into a program has never been easier.

Source code for geoAssembler uses symbols, standard assembly language mnemonics and addressing modes. In a symbolic assembler, symbols can be defined to represent constants, variables and sections of code, such as subroutines. Unlike other assemblers, Berkeley's recognizes symbols up to 20 characters long and containing both upper- and lowercase characters.

Another time-saving feature of geoAssembler is its provision for macros, which are handy for such operations as moving a byte from one memory location to another.

GeoAssembler contains a built-in expression evaluator that's capable of 16-bit math and provides 26 math and logical operators, including such uncommon ones as bitwise ones-complement and modulus (remainder of integer division). The evaluator can also differentiate between logical and bitwise AND, OR and XOR operations.

Conditional assembly will let you assemble sections of code or not, depending on the values of expressions. In this way, different versions of your program can be assembled from the same source code. Conditional assembly is commonly used to include special code for test versions of a program.

GeoAssembler is one of the fastest assemblers ever written for the C-64. Crunching a test file of 390 lines of source code took me 2¾ minutes using a standard assembler, while this program took only 45 seconds—and that was with both the input and output files on disk. Assembly can go even faster when you exploit the high-speed input and output of a RAM expansion unit. In fact, a RAM expander is highly recommended for use with geoProgrammer.

When geoAssembler encounters errors during assembly, they're sent to an error file. The program produces 52 different error messages that are exceptionally descriptive, pointing out the exact spot in the source code where the error is located.

GEOLINKER

Unlike many assemblers, Berkeley's doesn't produce runnable programs directly, because all the object files it creates are relocatable. The files are adjusted to run in specific parts of memory by geoLinker. This program also can combine multiple object files into executable programs, enabling you to build a library of modules for performing common routines.

To simplify the linking of modules, geoLinker supports external references—symbols that reside in one module and are called from another. For example, your main application module might call a module to clear the screen. When geoLinker links such files, it resolves the external reference by assigning an address to the clear-screen subroutine. Atypical of linkers and assemblers, Berkeley's don't require that external references be declared.

Among geoLinker's GEOS-specific functions are its ability to attach file headers and create VLIR applications. The header is the part of a file containing its deskTop icon and information about the file's purpose. VLIR applications consist of a main module with overlay modules that are loaded into memory as required. Before geoProgrammer, both of these structures were difficult to manipulate. Now, geoLinker links them automatically.

GeoLinker operates in much the

same way as geoAssembler. It accepts commands from a geoWrite file and produces a detailed error file if things go sour during the linking process.

GEODEBUGGER

Bugs are a fact of life for programmers, infesting even the most carefully planned code. However, geoDebugger provides the right tools to rout them out of your GEOS applications.

GeoDebugger is actually two programs in one. If you use a 1750 or 1764 RAM expander, double-clicking on the geoDebugger icon loads the full-featured Super-Debugger into expansion RAM. With this program's more than 80 commands, you can flip almost any bit in your computer.

Using geoWrite, you can create macros to add or alter Super-Debugger commands as desired. The macros may contain as many as 250 keystrokes and are loaded automatically when you run geoDebugger. If a macro named AutoExec is included in the macro file, it will configure geoDebugger to your liking during startup.

If you don't have a RAM expansion unit, you must use the alternative geoDebugger program, Mini-Debugger. It offers most of the functions of Super-Debugger, but because it resides in the computer's RAM, it may get in the way of the application you're debugging.

At first glance, geoDebugger looks much like the monitor program built into the C-128. However, it provides additional features, such as commands for reading disk sectors into a buffer, altering them and then writing them back to disk.

The operation of geoDebugger is reminiscent of some of the software-transparent memory dump and screen dump cartridges that halt a program to carry out their functions. It sits out of harm's way in the RAM expander (or an unused part of memory, if you're using Mini-Debugger) and gives the program you're debugging free reign of the computer.

GeoDebugger maintains its own screen. You can toggle between it and your application screen by pressing the F7 key.

Disassembling an application with geoDebugger is a pleasure. During linking, geoLinker sends symbols and their addresses to a debugging file, then geoDebugger fetches them from this file while disassembling. As a result, the disassembled code closely resembles the original source code.

SUMMARY

The geoProgrammer programs are relatively bug-free, but I did encounter a couple of aggravations in using them. First, in spite of all the commands available in geoDebugger, there's no way to send output to a printer. I sorely missed this function, which is basic in many simple monitors.

Second, and even more bothersome, is the way files are replaced without warning during saves. If you want to preserve an assembled version of an application, you must rename it or transfer it to another disk; otherwise you'll lose it during the next assembly. GeoLinker suffers from the same problem. If you specify the same name for your output file as your source code file, your source code will be overwritten when the file is linked—and you'll never get it back!

There were problems with both geoAssembler and geoLinker in the first version of geoProgrammer to be shipped, but Berkeley released patches to make them run properly. Interestingly enough, geoDebugger is used to install the patches. The patch file is available on QuantumLink.

In spite of these glitches, geoProgrammer is an excellent package. It combines powerful, easy-to-use programming tools and a thorough, clearly written manual into a complete assembly language development system that should meet the needs of even the most demanding programmer. ■

Randy Winchester has been writing GEOS applications for a year and a half. His first utility, SEQ→TextScrap, is available on QuantumLink and BBSs.

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TELECOMPUTING WORKSHOP

Who broke this BBS? Also, shop, get stock reports and go prospecting, all on a bulletin board system.

By DAVID BRADLEY

BBS'S WITH AN UNUSUAL TWIST are the first subject of this month's Telecomputing Workshop. One of them you can run yourself; the others are online, ready to receive your call.

First, Matchmaker Enterprises, producer of the Dial-Your-Match BBS software I mentioned last month, also sells a BBS program called Fantasy Plaza that runs an online shopping mall. The manual included with the package is thorough, and the system is efficient and easy to run. While the files that make up the system are stored on disk, orders for products are stored on datasette tape. This probably seems surprising, but it ensures that you won't run out of space if a lot of messages or orders come in. For more information about Fantasy Plaza, write to Matchmaker Enterprises, PO Box 6055, Burbank, CA 91510.

Speaking of shopping, if you'd like to browse online instead of tending the store, call the SunCoast Shopping System, a 300-baud BBS open around the clock at 813-924-7113 in Florida. Log on, look around and make some online purchases.

If you're a prospector or rockhound, there's a BBS in Moscow, Pennsylvania, just for you. Called Indian Affairs, it can be reached at 717-842-6605 any hour of day or night, and it operates at both 300 and 1200 baud. When you get there, leave a message for The Indian.

How would you like to get *free* stock market forecasts? They're yours for a call to the Stock Market BBS at 408-733-9341. This system also runs 24 hours a day at 300 and 1200 baud. For more information about it and background information on the SYSOP, write or call Dr. Wallace Lin, PO Box 60842, Sunnyvale, CA 94088-0842; 408-720-8002.

Robyn Marcus updates a list of Commodore BBSs in and around Dallas, Texas, on a weekly basis. If you do the same or similar in your area, or would like his list, give Robyn's BBS a call anytime. The number is 214-570-3930.

THE GOOD AND THE BAD...

After reading about the TCM-1200H modem from Trans Com in last November's Telecomputing Workshop, Frederick R. Claus of Frankfort, Kentucky, decided to take the 1200-baud plunge. The modem arrived three days after he ordered it, and he's "extremely pleased with its operation." He also likes the public domain software, MultiTerm, that came with it. In case you're not familiar with this modem, it's a Hayes clone that comes out of the box ready to be plugged into the user port of a Commodore computer—and it costs less than $150.

If you use the Data-Net public domain BBS program and are interested in getting updates, write to Spencer Ray, PO Drawer "0"-C7, Milledgeville, GA 31061-0380.

Sylvia Payne, of Rio Piedras, Puerto Rico, wrote me a sad letter outlining how her system had been damaged by lightning and asking if lightning insurance is available for computers. The large insurance firms I spoke to all said that normal home policies cover lightning damage to computers and that the typical coverage is around $2000. This amount can usually be increased if you want, but, of course, it'll cost a bit more.

Sylvia says she saw an ad for insurance a long time ago, but decided that lightning damage could never happen to her... Now, whenever the sky threatens, she unplugs everything. It's cheaper to shut down for a while than lose your work and your computer!

This month's reader questions begin with one about BBS liability:

Q *I have a Telelearning modem, a C-64, a 1541 disk drive and an 1802 color monitor. Recently, I logged onto a BBS, talked for about a half hour, then logged off. Later, the SYSOP called me on the phone to say I'd broken his board. I had no problems while I was logged on, the only files I accessed were the user list and the password change option, and I'd never had any problems with his BBS before. The SYSOP wants me to pay for the damage, but I refuse; I don't think I could have broken his system. Am I right?*

—JAMES SCHOCH
EWING, NJ

A I don't see how you could have "broken" his BBS. Even if his disk drive had burst into flames (not to be confused with Burst mode on the 1571/81), I don't know of any command you could have entered or magic words you could have chanted that might be responsible. Probably, something like a disk error just happened to pop up while you were online.

Q *I started in telecommunications by buying Q-Link's special package that includes a free Commodore 1660 modem. The only software they sent with it was their own, and now I want to access other services. I've read that you're not enthusiastic about Common Sense, so what program would you suggest and where can I get it?*

—THOMAS HAWKINS
NORTH CLARENDON, VT

A A lot of fine terminal programs for the 1660 are available in the public domain. If you're still on Q-Link, look in the Telecommunications libraries or the TPUG area in the User Group Support area of the Commodore Information Network. You can also order 1660 programs from the public domain sources listed on pages 71 and 85 in last April's *RUN*.

The reason I don't recommend Common Sense isn't the program—some users love it. However, the manual is confusing and usually frustrating to beginners. It would have been nice if the people who wrote the manual had a bit of "common sense."

Q *I'm planning to start a BBS. Where can I get* good *commercial or public domain bulletin board software?*

—DON FERRARO
UPPER DARBY, PA

A Get the April 1988 issue of *RUN*, and on page 44 you'll find a list of commercial BBS programs and where to get them. You can also refer to the lists of public domain software suppliers in the same issue. ►

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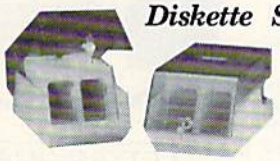

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Q *My system includes a 64C, two 1541s and a Commodore 1650 modem, and I use the Cesars Term V2.3 terminal program with it. I'm throughly pleased with the software, except for the fact that it won't tone dial. I've tried everything, but to no avail. Is there a way to tell the program my modem is a 1670, or the like, running at 300 baud? Then I'd be able to tone dial.*

—WALKER MCWEE
ADDRESS UNKNOWN

A Your problem isn't in the software. The 1650 is a pulse-dialing modem only, so it just can't dial with tones, and telling the program you have a 1670 won't do any good. However, there is a small public domain program that might help. Written by Bob Huff, it creates tones through the 64's SID chip. To use it, you must hold your phone over the speaker in your monitor and then listen for a carrier. The program is available on a TPUG (Toronto PET Users Group) disk. I know, because I put it there. You can contact TPUG at 5300 Yonge St., Toronto, Ontario, Canada M2N 5R2; 416-733-2933.

Q *About six months ago, I decided to buy a Commodore 1670 modem, but I haven't been able to find one anywhere. Can you tell me where to look?*

—JUDAH HILL
MESA, AZ

A The 1670 wasn't being marketed for a while, but many places have them now. Q-Link, for instance, is selling 1670s for $79.95. I don't know if this is a fresh batch of modems or a bunch Commodore forgot about in their warehouse, but they're available.

Q *Am I dreaming, or did I see a reference in your column to a user in Toronto who adapted her 1670 modem so it would work with an MS-DOS machine?*

—DAVE FRASER
ST. PETER'S, NOVA SCOTIA, CANADA

A The user, Jo-Anne Park, didn't do anything to her 1670. She built an interface that made her 1670 compatible with her Amiga, and the same could be done for an MS-DOS machine. LRA Enterprises of 35615 Avenue D, Yucaipa, CA 92399, now markets such a device.

One of the reasons Jo-Anne decided to create her interface was that the people at Commodore told her it couldn't be done.

BRADLEY BBS COMMANDMENT

If you call a BBS that you aren't likely to access again, leave a message telling the SYSOP you won't be back, so he or she can delete you from the user file. Most systems are limited to a certain number of users, and deleting your name will free up disk space for someone else. ■

Telecomputing Workshop is a monthly column dedicated to the needs of RUN *readers who are using, or intend to use, a Commodore computer for telecommunications. We invite you to submit your questions and comments to:*

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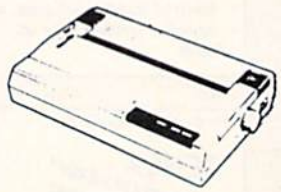

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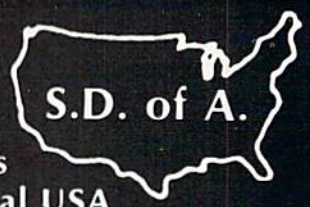

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COMMODORE CLINIC

Learn how to program interrupts and how to read disk names.

By LOU WALLACE

PROGRAMMING

Q *I've written a C-128 program that needs to know the name of the 1571 disk so it will be able to print out the disk name, along with other data, to the printer. The trouble is, I can't figure out how to do it! Any ideas?*

—JOHN SCHUELER
SEDONA, AZ

A It's quite easy, and there are a number of ways to do it. The easiest is to open a channel to the drive and read the directory, just as you would a program. Here's a short Basic program that reads the disk name into a variable. With a little more work, it could probably be used to read the entire disk directory, along with all the file types and file sizes.

```
10 REM READ A DISK NAME
20 OPEN 1,8,0,"$"
30 FOR I=0 TO 24
40 GET#1,A$:IF A$="" THEN A$=
   CHR$(0)
50 D$=D$+A$:NEXT
60 CLOSE 1
70 D$+MID$(D$,9,16)
80 PRINT D$
```

This works on any 1541, 1571 or 1581 drive. It reads in enough information to get just the disk name, then, using the MID$ function, it makes D$ equal to the data that's found between the double quotes at the top of your disk directory. This is the disk name, and it's always 16 characters long.

Q *What is the purpose of the REM* statements at the end of each line of code in programs listed in* RUN?

—Y. RUBINSON
DES PLAINES, IL

A They're used with *RUN*'s Checksum program, which catches errors you may type into a listing. Those REM* statements are followed by a number, called a checksum. Don't type in the REM* or the number that follows. Instead, when you have the Checksum program installed in memory and type in a program line, a number is printed to the screen. If the number matches the number following the REM*, you've correctly entered that line; if not, there's an error in the line that needs correcting. The Checksum program replaced our old Perfect Typist program in January 1988. It and the instructions for using it appear in every issue.

Q *I have a C-128, 1541 and Okidata 120 printer. I'm pretty new to computing, and I can't figure out how to list a Basic 7.0 program to my printer. I've tried the Open command, but it isn't working quite right. What I need is explicit instructions!*

—G. STOJHOVIC III
PHOENIX, AZ

A As Alf would say, "No problem!" All you need to do is load the Basic program, then, with your printer on, type the following in Direct mode. (Direct mode means just type it and press return.)

```
OPEN 4,4,7:CMD 4:LIST:PRINT#4:CLOSE 4
```

Your program will be printed on your printer, just as it appears on the screen. The only exceptions will be Quote-mode commands, which, depending on your printer's interface, will be translated into either ASCII sequences or graphics characters.

Q *When I'm creating high-resolution graphics on my C-64, I have a problem positioning pixels of different colors next to each other—the first colored dot changes to the new color! Why does that happen, and what can I do about it?*

—LEE RUMSEY
LONG BEACH, CA

A The problem you're experiencing is known as "color bleed." The way C-64 (and C-128) graphics are generated by the VIC chip allows two colors per color cell, one foreground and one background color. The color cell is an 8×8-pixel matrix. So, any attempt to change even one dot within the 8×8 area results in all foreground pixels (or all background pixels, depending on which color you're using) changing to the current color. There's nothing you can do about it when using the hi-res 320×200 Graphics mode.

If you use Multicolor Graphics mode, you can have up to four different colors per cell, but there are also some drawbacks to using this mode. The screen resolution reduces to 160×200, giving a coarser display, and the color cell becomes horizontally smaller—a 4×8-pixel matrix. Each pixel has twice the width as in Hi-Res mode.

Q *I was intrigued by your numeric format program in the March 1988 Commodore Clinic. I've made some enhancements to it and corrected a couple of minor bugs that were due to the math bug you described. The result is an improved version you might be interested in passing on to your readers.*

```
10 PRINT "X=";:INPUT Y
20 GOSUB 50
30 PRINT Y,X$
40 GOTO 10
50 X=Y*100:X=INT(X+.0001):X=X/100
60 X$=STR$(X):T=X-INT(X):IF T=0
   THEN X$=X$+".00":GOTO 80
70 V$=STR$(INT(X*10+0)):U=
   VAL(V$):S$=STR$(X*10):R=VAL(S$)
75 Z=R-U:IF Z=0 THEN X$+X$+"0"
80 FOR J=1 TO (10-LEN(X$)):X$=" "+
   X$:NEXT
90 RETURN
```

—HERBERT WALLER
HICKSVILLE, NY

A Thanks, Herb. The original formatting program generated quite a few letters, and a number of readers sent along their own versions. Evidently a good many have also been experimenting with the math bug. If anyone solves the math-bug problem, drop us a line.

SOFTWARE

Q *I've been using the HesWare Omniwriter program without a problem for the past few years, but it's occurred to me that perhaps I should get a backup of the program. I've tried contacting the company without success. Can you tell me how to reach them?*

—MORTON DIVACK
JACKSON HEIGHTS, NY

A HesWare (Human Engineered Software) has been out of business for some time, so you won't be able to buy a backup from them. However, since you are a legitimate owner of an original disk, you have the right to make one backup copy for your own use. The Omniwriter disk is copy-protected, so you'll need a copy program that can make a backup of copy-protected software.

Q *I have a C-64/1541 system and just recently added a 1581 as a second drive. Do I need a special copier to back up my 1541 disks to the 1581 format?*

—D. JOHNSON
LOS ANGELES, CA

A The 1581 places the directory in a different location than the 1541 (and 1571), so you can't use a whole-disk backup program to copy your 1541 disks. You need a program that copies the disk file by file, and a good one that's simple to use is Jim Butterfield's Copy/All 64. This program should already be on your 1541 Test Demo disk, as well as being available in every user's group library and on almost any BBS or computer network (GEnie, Quantum-Link, CompuServe, etc.).

Q *I do a lot of cooking, and I'm always coming across new recipes to try out. Before I write down another recipe and forget where I put it, I think this would be a good time to bring the trusty C-64 into the kitchen. My "C-64 dollar question": Is there a program specifically written for the gourmet cook for filing recipes? Thanks for your help!*

—C. SHAW
DARIEN, CT

A I checked the back issues of *RUN* and, sure enough, in the July '87 News and New Products there was an entry for a program called The Recipe Filer and Serving Converter. This program lets you enter recipes, file them away for later recall, print them out on the screen or to a printer and even allows you to scale the amount of ingredients to fit the number of servings you need. It's available from Microcraft, 9245 Washington, Brookfield, IL 60513 for about $10.

Incidentally, back when I was spending many hours every night trying to persuade my wife, Sharon, to let me buy a home computer, one of my regular arguments was that I would write just such a program for her. Since I never did, it looks like I'll have to send a check off for this one myself.

HARDWARE

Q *I have a C-64 and plan to upgrade to the C-128D. I've heard of the 1750 RAM expansion cartridge and am wondering if it works with the 128D. Also, does it work with GEOS, perhaps by allowing more of the program to remain in memory? If I get a 1581 drive, can I transfer my protected programs to it?*

—ANN BRANSTETTER
LAUREL, MT

A The 1750 adds an additional 512K of memory to the C-128, which is a really impressive upgrade. It does have its limits, though, because it doesn't directly increase the memory allowed for executable programs. Instead, it acts as a storage area for programs and data. However, because of its ability to make extremely high-speed direct memory transfers (DMAs) between the C-128 and the 1750, programs and data can be loaded into the RAM expansion unit and then transferred into the computer when needed. The usefulness of this becomes evident when using GEOS, as it can practically eliminate the bothersome (and slow) disk accesses you normally encounter.

The 1581 drive can also be used with GEOS 128 (although, at this writing, not with GEOS 64), providing very high speed with 800K storage. You can't copy most protected programs to the 1581, because it's quite different from the 1541 and 1571, but unprotected programs usually work with the 1581, and many protected programs (like GEOS 128) can use it for data storage.

Q *I've read that the empty ROM socket in the C-128 is mapped into memory locations $8000–$FFFF, and that memory expansion is in the same locations. I had planned on buying the Basic 8 ROM chip and the 1750 RAM expansion unit for use with Basic 8 and GEOS 128. Will the ROM interfere with the REU?*

—F. KRANZ, JR.
SEYMOUR, WI

A There's no conflict between the Basic 8 ROM chip and the 1750 REU. The ROM is unused and transparent unless installed into memory during system startup by holding down the control key. It works well with the 1750 REU, and, when not activated, doesn't interfere with any known software. ■

Do you have a problem or question about your Commodore computer system, software or programming? Commodore Clinic can help. Just send your questions to:

Commodore Clinic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

Queries are answered only through this column, and, due to the volume of mail, only questions likely to appeal to the majority of our readers can be published.

Learn To Walk Before You RUN

WE RECEIVE MANY LETTERS from new Commodore owners who want to type in program listings from *RUN* and need help in getting started. To answer many of the questions novice users have, we present the following guidelines.

1. First, keep in mind that as a beginner you should enter only short Basic programs. Avoid machine language listings and lengthy Basic programs until you get the hang of what you're doing.

2. To help you catch mistakes in typing in listings, we publish *RUN*'s Checksum program elsewhere in this issue.

3. If you intend to save the program you're typing in on a brand new disk, you must format that disk. To do this, insert the disk in your drive and type:

```
OPEN15,8,15 <press return>
PRINT#15,"N0:NAME,##" <press return>
```

The ## is a two-character identifier that can be any combination of letters or digits. NAME can be any title for the disk that you choose, as long as it's 16 characters or less.

After entering the above lines, wait for a few minutes while the disk spins inside the drive. When the disk stops, the formatting is done. Then type:

```
CLOSE15 <press return>
```

In 128 mode on a C-128, you can shorten this procedure by typing:

```
HEADER "NAME,##" <press return>
```

Caution: The formatting process erases any material already on the disk, so if you're formatting a used disk, make sure it doesn't contain any programs you want to keep. See item 11 below, on reading the disk directory, if you need to find out what's on the disk.

4. Before you start typing in a program listing, your computer's memory needs to be empty. To make sure it is, turn the computer off, wait a few seconds, and turn it on again.

5. As you type in the listing, remember to press the return key after typing each line. This enters the line into memory.

6. If you want to review what you've entered, type LIST and press the return key; all the lines you've entered will scroll by. You can slow the scrolling on the C-64 by holding down the control key, and on the C-128 by pressing the no-scroll key. To view certain specific lines, type LIST, followed by the line numbers you want; then press the return key. For example, LIST 10–50 displays lines 10 through 50, and LIST 20 displays only line 20.

7. If you find an error in a line, delete the incorrect characters with the insert-delete key, then retype that portion and press return to enter the new line in memory.

8. Be sure to save the program to disk fairly often during the typing process. Otherwise, you could lose all your work if a power glitch wipes out your computer's memory. To save a partial or complete Basic program listing, type:

```
SAVE "NAME",8 <press return>
```

In 128 mode on a C-128, you can press F5, type in NAME and press the return key. Here, NAME is the filename you want the program to have, not the disk name you used when formatting.

Each time you save a revised program to the same disk, you must change its filename, or a disk error will occur, even if only one character is changed. An easy way to vary the filename is by adding version numbers to the end of the basic name (Program.1 and Program.2, for example). The numbers will also tell you which version is the latest.

9. If you wish to erase (scratch) unwanted programs from a disk, type:

```
OPEN15,8,15 <press return>
PRINT#15,"S0:filename" <press return and wait a few seconds>
CLOSE15 <press return>
```

In 128 mode on a C-128, you can type:

```
SCRATCH "NAME" <press return>
```

Be sure not to erase the final version!

10. Always save the final version of a program to two disks, so you have a backup copy in case one of the disks gets damaged. When saving to two different disks, you can use the same program name in each case.

11. To view a complete list of the filenames on a disk (i.e., read the disk directory), type:

```
LOAD "$",8 <press return>
LIST <press return>
```

In 128 mode on a C-128, you can just press F3.

12. When you know what program you want to load, next make sure you know *exactly* how its filename is spelled in the disk directory, including punctuation, special characters and spaces. A mistake in the filename will keep the load from working.

If the disk directory is still on the screen when you enter the Load command, you can refer to that for the spelling. If the directory will be gone from the screen by the time you enter the Load command, jot down the exact spelling of the filename for reference. Once you're sure of the filename, load the program by typing:

```
LOAD "NAME",8 <press return>
```

In 128 mode on a C-128, you can just press F2, type in the filename and press the return key.

13. After you've loaded the program, enter RUN to use it. ■

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From p. 50.

```
18Ø PRINT"{4 SPACEs}{SHFT J}{8
    SHFT *s}{COMD E}{21 SHFT *s
    }{SHFT K}{CTRL 1}":RETURN
                          :REM*195
19Ø IN$=""                :REM*75
2ØØ PRINT"{COMD I}{CRSR LF}";:G
    OSUB1ØØ:A=ASC(A$):B=LEN(IN$
    ):IFA=13THENPRINT" {CRSR LF
    }":RETURN             :REM*24
21Ø IFA=2ØTHENIFBTHENPRINT" {2
    CRSR LFs}";:IN$=LEFT$(IN$,B
    -1):GOTO2ØØ           :REM*177
22Ø IF(A AND127)<32OR(B>IL)THEN
    2ØØ                   :REM*252
23Ø PRINTA$;:IN$=IN$+A$:GOTO2ØØ
                          :REM*79
24Ø IFDU%<7THENDU%=8      :REM*216
25Ø CLOSE15:OPEN15,DU%,15
                          :REM*78
26Ø IF(C6)THENBANKØ:GOSUB27Ø:BA
    NK15:RETURN:REM C-128 ONLY!
                          :REM*39
27Ø QX%=PEEK(SC+1Ø23):RETURN
                          :REM*239
28Ø GOSUB3ØØ:IF(EØ)THEN41Ø
                          :REM*3Ø
29Ø RETURN                :REM*177
3ØØ INPUT#15,EØ,E1$,E2,E3:RETUR
    N                     :REM*81
31Ø HI=INT(QR/256):LO=QR-(HI*25
    6):RETURN             :REM*125
32Ø POKE255,FF:IF(C6)THEN34Ø
                          :REM*66
33Ø A$=IN$:SYS49158:RETURN
                          :REM*2ØØ
34Ø QR=POINTER(IN$):GOSUB31Ø:PO
    KE254,HI:POKE253,LO:SYS487Ø
    :RETURN               :REM*1Ø4
35Ø POKE255,DU%           :REM*178
36Ø A$=IN$:SYS4917Ø:GOTO28Ø
                          :REM*137
37Ø PRINT"{SHFT CLR}{2 CRSR DNs
    }FILENAME:";          :REM*253
38Ø IL=16:GOSUB19Ø:IFIN$=""THEN
    EØ=1:RETURN           :REM*12
39Ø IFIN$="$"THENGOSUB172Ø:GOTO
    37Ø                   :REM*7Ø
4ØØ OPEN8,DU%,8,IN$+",S,"+TF$:G
    OTO28Ø                :REM*12
41Ø PRINTJ$"DISK ERROR: "+STR$(
    EØ)+", "+E1$+", "+STR$(E2)+
    ", "+STR$(E3):GOTO9Ø:REM*31
42Ø GOSUB 44Ø             :REM*246
43Ø A=NF%+1:DIM FF$(A),NF$(A),F
    T%(A),FL%(A),NP%(A),FC$(51)
    ,Q$(51):RETURN        :REM*172
44Ø IF(C6)THENPOKE51,PEEK(49):P
    OKE52,PEEK(5Ø):RETURN
                          :REM*245
45Ø POKE49,PEEK(47):POKE5Ø,PEEK
    (48):RETURN           :REM*19Ø
46Ø GOSUB57Ø              :REM*44
47Ø FORX=1TONP%:Y=NP%(X):PRINT
    NF$(Y)+" :"+FF$(Y):NEXTX:RE
    TURN                  :REM*179
48Ø TF$="R":GOSUB55Ø:IF(EØ)THEN
    54Ø                   :REM*78
49Ø PRINT:GOSUB46Ø:CLOSE8:INPUT
    "{2 CRSR DNs}{CTRL 3}IS THI
    S IT?{CTRL 1} N {4 CRSR LFs
    }";A$:RETURN          :REM*133
5ØØ CLOSE8:OPEN8,DU%,8,"/"+DB$+
    ",S,R":GOSUB28Ø:IFEØTHENDB$
    ="":GOTO54Ø           :REM*22Ø
51Ø INPUT#8,NF%:INPUT#8,NP%:GOS
    UB43Ø                 :REM*147
52Ø FORX=ØTONF%:INPUT#8,NF$(X):
    INPUT#8,FT%(X):INPUT#8,FL%(
    X):INPUT#8,NP%(X)     :REM*168
53Ø NEXTX                 :REM*71
54Ø CLOSE8:RETURN         :REM*2Ø
55Ø PRINT"{SHFT CLR}{CTRL N}{2
    CRSR DNs}{CTRL 3}DOCUMENT N
    AME: {CTRL 1}";:GOTO38Ø
                          :REM*115
56Ø FORX=1TONP%:Y=NP%(X):PRINT#
    8,CHR$(34)+FF$(Y):NEXTX:RET
    URN                   :REM*153
57Ø FORX=1TONP%:Y=NP%(X):INPUT#
    8,FF$(Y):NEXTX:RETURN
                          :REM*138
58Ø BLOAD(IN$),BØ,U(DU%),P39936
    :BANK15:REM C-128 ONLY
                          :REM*47
59Ø SYS(ML+15):NF%=PEEK(255):IF
    (NF%)THENNF%=NF%-1    :REM*178
6ØØ RETURN                :REM*228
61Ø P$=CHR$(13)+"{8 SPACEs}":GO
    SUB24Ø:GOSUB12Ø:PRINT"{HOME
    }":PRINT"{4 SPACEs}{CRSR RT
    }{CTRL 9}{2 SPACEs}FORM{2 S
    PACEs}{CTRL Ø}         :REM*244
62Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9} WRITER {CTRL Ø}
                          :REM*2Ø4
63Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{8 SPACEs}{CTRL Ø}{3
    CRSR RTs}{CTRL 3}{CTRL 9}{4
     SPACEs}MAIN MENU{CTRL 1}
                          :REM*1Ø1
64Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{3 SPACEs}BY{3 SPACEs
    }{CTRL Ø}              :REM*134
65Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}T. BROWN{CTRL Ø}{2 CR
    SR DNs}"              :REM*79
66Ø PRINTP$"< 1 >{2 SPACEs}={2
    SPACEs}FORM EDITOR"P$"{CRSR
     DN}< 2 >{2 SPACEs}={2 SPAC
    Es}DATA BASE          :REM*179
67Ø PRINTP$"< 3 >{2 SPACEs}={2
    SPACEs}PRINTER"P$"{CRSR DN}
    < 4 >{2 SPACEs}={2 SPACEs}D
    ISK DRIVE             :REM*146
68Ø FF=Ø:GOSUB1ØØ:ON(VAL(A$)) G
    OTO95Ø,1Ø4Ø,71Ø,86Ø:REM*171
69Ø GOTO61Ø               :REM*254
7ØØ STOP                  :REM*79
71Ø GOSUB12Ø:PRINT"{HOME}":PRIN
    T"{4 SPACEs}{CRSR RT}{CTRL
    9}{8 SPACEs}{CTRL Ø} :REM*6
72Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9} {CTRL Ø}:{4 SPACEs}:
    {CTRL 9} {CTRL Ø}  :REM*1Ø7
73Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9} {CTRL Ø}:{4 SPACEs}:
    {CTRL 9} {CTRL Ø}{3 CRSR RT
    s}{CTRL 3}{CTRL 9}{2 SPACEs
    }PRINTER{2 SPACEs}MENU{CTRL
     1}                   :REM*97
74Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{COMD Q}{CTRL Ø}{6 CO
    MD Os}{CTRL 9}{COMD W}{CTRL
     Ø}                   :REM*92
75Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{COMD Z}{6 SHFT *s}{C
    OMD X}{CTRL Ø}{2 CRSR DNs}"
                          :REM*58
76Ø IFDB$=""THEN84Ø       :REM*2ØØ
77Ø GOSUB26Ø:IF(QX%<>123)THEN19
    ØØ                    :REM*93
78Ø PRINT"{CRSR DN}{CTRL 3}CURR
    ENT DBASE: {CTRL 5}"+DB$
                          :REM*229
79Ø PRINTP$"{2 CRSR LFs}{CTRL 1
    }< 1 >{2 SPACEs}={2 SPACEs}
    CHANGE DATA BASE"P$"{CRSR D
    N}{2 CRSR LFs}< 2 >{2 SPACE
    s}={2 SPACEs}LOAD A FORM
                          :REM*219
8ØØ PRINTP$"{2 CRSR LFs}< 3 >{2
     SPACEs}={2 SPACEs}FILL FRO
    M DATA BASE"P$"{CRSR DN}{2
    CRSR LFs}< 4 >{2 SPACEs}={2
     SPACEs}FILL FROM KEYBOARD
                          :REM*78
81Ø PRINTP$"{2 CRSR LFs}< 5 >{2
     SPACEs}={2 SPACEs}PRINT A
    BLANK FORM"P$"{CRSR DN}{2 C
    RSR LFs}< 6 >{2 SPACEs}={2
    SPACEs}SET PRINTER CODES
                          :REM*89
82Ø GOSUB1ØØ:ON(VAL(A$)) GOTO12
    7Ø,19ØØ,128Ø,131Ø,132Ø,133Ø
                          :REM*23
83Ø GOTO61Ø               :REM*131
84Ø GOSUB235Ø:IFDB$=""THEN61Ø
                          :REM*5Ø
85Ø GOTO71Ø               :REM*153
86Ø GOSUB12Ø:PRINT"{HOME}":PRIN
    T"{4 SPACEs}{CRSR RT}{CTRL
    9}{7 SPACEs}{COMD D}{CTRL Ø
    }                     :REM*89
87Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{3 SPACEs}{SHFT U}{SH
    FT I}{3 SPACEs}{CTRL Ø}
                          :REM*14
88Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{3 SPACEs}{SHFT J}{SH
    FT K}{3 SPACEs}{CTRL Ø}{2 C
    RSR RTs}{CTRL 3}{CTRL 9}{2
    SPACEs}DISK DRIVE MENU{2 SP
    ACEs}{CTRL Ø}{CTRL 1}
                          :REM*85
89Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{3 SPACEs}{CTRL Ø}{CO
    MD K}{CTRL 9}{COMD K}{3 SPA
    CEs}{CTRL Ø}          :REM*11Ø
9ØØ PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{3 SPACEs}{COMD C}{CO
    MD V}{3 SPACEs}{CTRL Ø}{2 C
    RSR DNs}"             :REM*147
91Ø PRINTP$"< 1 >{2 SPACEs}={2
    SPACEs}DIRECTORY "P$"{CRSR
    DN}< 2 >{2 SPACEs}={2 SPACE
    s}DOS COMMANDS"       :REM*26
92Ø PRINTP$"< 3 >{2 SPACEs}={2
```

```
    SPACEs}ERROR CHANNEL"
                          :REM*118
93Ø GOSUB1ØØ:ON(VAL(A$)) GOTO17
    1Ø,175Ø,178Ø          :REM*235
94Ø GOTO61Ø               :REM*241
95Ø GOSUB12Ø:PRINT"{HOME}":PRIN
    T"{4 SPACEs}{CRSR RT}{CTRL
    9} {COMD A}{3 SHFT *s}{COMD
     S}{2 SPACEs}{CTRL Ø}
                          :REM*139
96Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9} {SHFT -}{3 SPACEs}{C
    OMD Q}{COMD S} {CTRL Ø}
                          :REM*141
97Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9} {SHFT -}{3 SPACEs}{2
     SHFT -s} {CTRL Ø}{2 CRSR R
    Ts}{CTRL 3}{CTRL 9} FORM/FI
    ELD EDITOR {CTRL Ø}{CTRL 1}
    "                     :REM*234
98Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9} {COMD Z}{COMD R}{2 S
    HFT *s}{COMD X}{SHFT -} {CT
    RL Ø}                 :REM*194
99Ø PRINT"{4 SPACEs}{CRSR RT}{C
    TRL 9}{2 SPACEs}{COMD Z}{3
    SHFT *s}{COMD X} {CTRL Ø}{2
     CRSR DNs}"           :REM*12
1ØØØ PRINTP$"< 1 >{2 SPACEs}={2
     SPACEs}CREATE NEW FORM"P$
    "{CRSR DN}< 2 >{2 SPACEs}=
    {2 SPACEs}EDIT OLD FORM"
                          :REM*195
1Ø1Ø PRINTP$"< 3 >{2 SPACEs}={2
     SPACEs}LOAD A FORM"P$"{CR
    SR DN}< 4 >{2 SPACEs}={2 S
    PACEs}SAVE A FORM":REM*15Ø
1Ø2Ø FL=1:GOSUB1ØØ:ON(VAL(A$))
    GOTO18ØØ,181Ø,192Ø,187Ø
                          :REM*215
1Ø3Ø GOTO61Ø               :REM*72
1Ø4Ø GOSUB12Ø:PRINT"{HOME}":PRI
    NT"{4 SPACEs}{CRSR RT}{CTR
    L 9}{COMD A}{SHFT *}{COMD
    S}{5 SPACEs}{CTRL Ø}
                          :REM*1Ø
1Ø5Ø PRINT"{4 SPACEs}{CRSR RT}{
    CTRL 9}{SHFT -} {COMD Q}{C
    OMD S} {COMD A}{SHFT *}{CO
    MD S}{CTRL Ø}         :REM*1Ø2
1Ø6Ø PRINT"{4 SPACEs}{CRSR RT}{
    CTRL 9}{COMD Z}{COMD R}{CO
    MD X}{SHFT -}{LEFT ARROW}{
    SHFT -}{SHFT W}{SHFT -}{CT
    RL Ø}{2 CRSR RTs}{CTRL 3}{
    CTRL 9}{3 SPACEs}DATA BASE
     MENU{2 SPACEs}{CTRL Ø}{CT
    RL 1}                 :REM*14Ø
1Ø7Ø PRINT"{4 SPACEs}{CRSR RT}{
    CTRL 9} {COMD Z}{SHFT *}{C
    OMD X} {COMD Z}{COMD E}{CO
    MD X}{CTRL Ø}         :REM*215
1Ø8Ø PRINT"{4 SPACEs}{CRSR RT}{
    CTRL 9}{8 SPACEs}{CTRL Ø}{
    2 CRSR DNs}           :REM*118
1Ø9Ø IFDB$=""THEN116Ø     :REM*85
11ØØ PRINT"{CRSR DN}{CTRL 3}CUR
    RENT DBASE: {CTRL 5}"+DB$
                          :REM*154
111Ø PRINTP$"{CTRL 1}{CRSR DN}<
     1 >{2 SPACEs}={2 SPACEs}O
    PEN A DATA BASE"P$"{CRSR D
    N}< 2 >{2 SPACEs}={2 SPACE
    s}ADD A RECORD"       :REM*25Ø
112Ø PRINTP$"< 3 >{2 SPACEs}={2
     SPACEs}DELETE A RECORD"P$
    "{CRSR DN}< 4 >{2 SPACEs}=
    {2 SPACEs}CHANGE A RECORD"
                          :REM*243
113Ø PRINTP$"< 5 >{2 SPACEs}={2
     SPACEs}VIEW A RECORD"
                          :REM*181
114Ø GOSUB1ØØ:ON(VAL(A$)) GOTO2
    34Ø,239Ø,241Ø,243Ø,247Ø
                          :REM*235
115Ø GOTO61Ø              :REM*192
116Ø GOSUB235Ø:IFDB$=""THEN61Ø
                          :REM*1Ø9
117Ø GOTO1Ø4Ø             :REM*2Ø2
118Ø IL=2:PRINT"{SHFT CLR}{CTRL
     1}{2 CRSR DNs}MONTH (1-12
    ): ";                 :REM*233
119Ø GOSUB19Ø:MO=VAL(IN$):IFMO<
    1ORMO>12THENMO=1      :REM*133
12ØØ PRINT"{2 CRSR DNs}DAY (1-3
    1): ";:GOSUB19Ø:DA=VAL(IN$
    ):IFDA<1ORDA>31THENDA=1
                          :REM*38
121Ø POKE1Ø21,MO:POKE1Ø22,DA:DU
    %=PEEK(186)           :REM*73
122Ø POKE787,123          :REM*73
123Ø IF(C6)THENBLOAD"EDITOR.128
     ML",U(DU%):BANK15:GOTO2Ø:
    REM C128 ONLY         :REM*124
124Ø LOAD"EDITOR.64 ML",DU%,1
                          :REM*155
125Ø DU%=PEEK(186):ML=49152:SC=
    39936:C6=PEEK(1Ø23):IF(C6)
    THENML=4864           :REM*175
126Ø MO=PEEK(1Ø21):DA=PEEK(1Ø22
    ):PD=4:PS=7:PT=5:J$=CHR$(1
    3):GOTO6Ø             :REM*113
127Ø GOSUB235Ø:GOTO71Ø    :REM*162
128Ø GOSUB48Ø:IF(E0)OR(A$<>"Y")
    THEN13ØØ              :REM*29
129Ø GOSUB249Ø:GOSUB265Ø:GOTO26
    9Ø                    :REM*166
13ØØ CLOSE8:GOTO71Ø       :REM*115
131Ø PRINT"{SHFT CLR}{CTRL N}{C
    TRL 9}FILL OUT FORM:":GOSU
    B228Ø:GOSUB249Ø:GOSUB265Ø:
    GOTO269Ø              :REM*1Ø8
132Ø PRINT"{SHFT CLR}{CTRL N}PR
    INT A BLANK FORM":GOSUB263
    Ø:GOTO269Ø            :REM*237
133Ø GOSUB12Ø:PRINT"{HOME}{CTRL
     6}":PRINT"{4 SPACEs}{CRSR
     RT}{CTRL 9}{8 SPACEs}{CTR
    L Ø}                  :REM*93
134Ø PRINT"{4 SPACEs}{CRSR RT}{
    CTRL 9} {CTRL Ø}:{4 SPACEs
    }:{CTRL 9} {CTRL Ø}
                          :REM*133
135Ø PRINT"{4 SPACEs}{CRSR RT}{
    CTRL 9} {CTRL Ø}:{4 SPACEs
    }:{CTRL 9} {CTRL Ø}{3 CRSR
     RTs}{CTRL 3}{CTRL 9}{3 SP
    ACEs}SET PRINTER {CTRL 6}
                          :REM*1Ø8
136Ø PRINT"{4 SPACEs}{CRSR RT}{
    CTRL 9}{COMD Q}{CTRL Ø}{6
    COMD Os}{CTRL 9}{COMD W}{C
    TRL Ø}                :REM*2Ø6
137Ø PRINT"{4 SPACEs}{CRSR RT}{
    CTRL 9}{COMD Z}{6 SHFT *s}
    {COMD X}{CTRL Ø}{2 CRSR DN
    s}{CTRL 1}"           :REM*7Ø
138Ø PRINTP$"< 1 >{2 SPACEs}={2
     SPACEs}ERASE ALL CODES"P$
    "{CRSR DN}< 2 >{2 SPACEs}=
    {2 SPACEs}ENTER CODES
                          :REM*17
139Ø PRINTP$"< 3 >{2 SPACEs}={2
     SPACEs}LOAD CODES"P$"{CRS
    R DN}< 4 >{2 SPACEs}={2 SP
    ACEs}SAVE CODES       :REM*34
14ØØ GOSUB1ØØ:ON(VAL(A$)) GOTO1
    42Ø,149Ø,144Ø,146Ø:REM*19Ø
141Ø GOTO71Ø              :REM*2Ø3
142Ø GOSUB143Ø:GOTO133Ø   :REM*9Ø
143Ø FORX=ØTO49:FC$(X)="":NEXT:
    RETURN                :REM*27
144Ø TF$="R":GOSUB37Ø:IFE0 THEN
    148Ø                  :REM*162
145Ø INPUT#8,PD:INPUT#8,PS:INPU
    T#8,PT:FORX=1TO5Ø:INPUT#8,
    PC$(X):NEXT:GOTO148Ø
                          :REM*24
146Ø TF$="W":GOSUB37Ø:IFE0 THEN
    148Ø                  :REM*81
147Ø PRINT#8,PD:PRINT#8,PS:PRIN
    T#8,PT:FORX=1TO5Ø:PRINT#8,
    CHR$(34)+PC$(X):NEXT
                          :REM*236
148Ø CLOSE8:GOTO133Ø      :REM*184
149Ø PD=4:PS=5:INPUT"{SHFT CLR}
    {2 CRSR DNs}PRINTER DEVICE
     #: 4 {4 CRSR LFs}";A$:A=V
    AL(A$):IF(A)THENPD=A
                          :REM*57
15ØØ INPUT"{CTRL 1}{2 CRSR DNs}
    SECONDARY ADDRESS: 7 {4 CR
    SR LFs}";A$:A=VAL(A$):IF(A
    )THENPS=A             :REM*41
151Ø INPUT"{CTRL 1}{2 CRSR DNs}
    TRANSPARENT SECONDARY: 5 {
    4 CRSR LFs}";A$:A=VAL(A$):
    IF(A)THENPT=A         :REM*87
152Ø GOSUB143Ø            :REM*62
153Ø E$=CHR$(27)          :REM*1Ø2
154Ø Q$(Ø)=E$+CHR$(64):F$(Ø)="N
    ORMAL FONT"           :REM*122
155Ø Q$(1)=CHR$(14):F$(1)="EXPA
    NDED"                 :REM*214
156Ø Q$(2)=CHR$(15):F$(2)="COND
    ENSED"                :REM*68
157Ø Q$(3)=E$+CHR$(83)+CHR$(Ø):
    F$(3)="SUPERSCRIPT":REM*41
158Ø Q$(4)=E$+CHR$(83)+CHR$(1):
    F$(4)="SUBSCRIPT"     :REM*28
159Ø Q$(5)=E$+CHR$(52):F$(5)="I
    TALICS"               :REM*229
16ØØ Q$(6)=Q$(1)+Q$(5):F$(6)="E
    XPANDED ITALIC"       :REM*127
161Ø Q$(7)=Q$(2)+Q$(5):F$(7)="C
    ONDENCED ITALIC"      :REM*36
162Ø Q$(8)=Q$(3)+Q$(5):F$(8)="S ►
```

```
    UPERSCRIPT ITALIC :REM*213
163Ø Q$(9)=Q$(4)+Q$(5):F$(9)="S
    UBSCRIPT ITALIC"  :REM*16Ø
164Ø PRINT"{2 CRSR DNs}SELECT F
    ONT CHANGES FOR EACH LINE.
    "                 :REM*195
165Ø A$=""            :REM*73
166Ø INPUT"{3 CRSR DNs}{CTRL 3}
    LINE # 1-5Ø <{CTRL 6}CR=EX
    IT{CTRL 3}>{CTRL 1} ";A$:A
    =VAL(A$):IF(A<1)OR(A>5Ø)TH
    EN133Ø            :REM*82
167Ø A=A-1            :REM*131
168Ø PRINT:FORX=ØTO9:PRINTSTR$(
    X)+" = "+F$(X):NEXT
                      :REM*119
169Ø INPUT"{CRSR DN}{CTRL 7}FON
    T # <{CTRL 6}CR = NORMAL{C
    TRL 3}>{CTRL 1} ";A$:B=VAL
    (A$):IFB<1ORB>9THENB=Ø
                      :REM*233
17ØØ FC$(A)=Q$(B):GOTO165Ø
                      :REM*118
171Ø GOSUB172Ø:GOTO86Ø :REM*143
172Ø PRINT"{SHFT CLR}{2 CRSR DN
    s}{CTRL 3}DIRECTORY{CTRL 1
    }{2 CRSR DNs}":CLOSE1:OPEN
    1,DU%,Ø,"$Ø":GOSUB28Ø:IFEØ
    THEN174Ø          :REM*225
173Ø SYS(ML+21)       :REM*244
174Ø CLOSE1:GOTO9Ø    :REM*2Ø9
175Ø PRINT"{SHFT CLR}{2 CRSR DN
    s}{CTRL 3}DISK COMMAND:{CT
    RL 1} ";:IL=32:GOSUB19Ø:IF
    IN$=""THEN86Ø     :REM*86
176Ø A=VAL(IN$):IF(A>7)THEN DU%
    =A:GOSUB24Ø:GOTO86Ø
                      :REM*248
177Ø GOSUB24Ø:PRINT#15,IN$
                      :REM*66
178Ø GOSUB28Ø:IF(EØ=Ø)THENGOSUB
    41Ø               :REM*57
179Ø GOTO86Ø          :REM*8Ø
18ØØ GOSUB8Ø:PRINT"{CTRL N}";:S
    YS(ML):GOTO182Ø   :REM*3Ø
181Ø GOSUB8Ø:PRINT"{CTRL N}";:S
    YS(ML+3)          :REM*128
182Ø NF%=PEEK(255):IFNF%<1THEN9
    5Ø                :REM*15Ø
183Ø NF%=NF%-1        :REM*99
184Ø POKE(SC+1Ø23),123  :REM*67
185Ø DB$="":PRINT"{SHFT CLR}{2
    CRSR DNs}YOU HAVE CREATED"
    +STR$(NF%+1)+" FIELDS"
                      :REM*62
186Ø PRINT"DEFINE THEM NOW? Y/N
    ":GOSUB1ØØ:ON((A$="Y")+2)G
    OTO2Ø2Ø,95Ø        :REM*164
187Ø PRINT"{SHFT CLR}{2 CRSR DN
    s}SAVE A FORM":GOSUB199Ø:I
    FIN$=""THEN95Ø    :REM*55
188Ø IF(C6)THEN BSAVE(IN$),BØ,U
    (DU%),P39936TOP45Ø56:BANK1
    5:GOTO95Ø:REM C-128:REM*74
189Ø GOSUB35Ø:GOTO95Ø  :REM*225
19ØØ GOSUB194Ø:IFIN$<>""THEN71Ø
                      :REM*247
191Ø GOTO61Ø          :REM*183
192Ø GOSUB194Ø:IFIN$<>""THEN95Ø
                      :REM*124
193Ø GOTO61Ø          :REM*219
194Ø PRINT"{SHFT CLR}{2 CRSR DN
    s}LOAD A FORM":GOSUB199Ø:I
    FIN$=""THENRETURN  :REM*Ø
195Ø CLOSE8:OPEN8,DU%,8,IN$+",P
    ,R":GOSUB28Ø:CLOSE8:IFEØTH
    ENRETURN          :REM*68
196Ø NF%=Ø:IF(C6)THEN 58Ø
                      :REM*152
197Ø POKE787,234:LOAD(IN$),DU%,
    1                 :REM*192
198Ø GOSUB59Ø:GOTO61Ø  :REM*59
199Ø PRINT"{2 CRSR DNs}FORM NAM
    E: ";:IL=16:GOSUB19Ø:IFIN$
    =""THENRETURN     :REM*255
2ØØØ IFIN$="$"THENGOSUB172Ø:GOT
    O199Ø             :REM*1Ø2
2Ø1Ø RETURN           :REM*96
2Ø2Ø GOSUB43Ø         :REM*56
2Ø3Ø NP%=Ø:FORFF=ØTONF%  :REM*4
2Ø4Ø LI=PEEK(SC+FF):CO=PEEK(SC+
    256+FF):FL%(FF)=(PEEK(SC+5
    12+FF))+1         :REM*168
2Ø5Ø PRINT"{3 CRSR DNs}FIELD #"
    +STR$(FF)+J$+"AT LINE: "+S
    TR$(LI)+" & COLUMN: "+STR$
    (CO)              :REM*232
2Ø6Ø PRINT"FIELD LENGTH:"+STR$(
    FL%(FF))          :REM*1Ø2
2Ø7Ø PRINT"{2 CRSR DNs}NAME FOR
     FIELD: ":IL=16:GOSUB19Ø:I
    FIN$=""THEN95Ø    :REM*26
2Ø8Ø NF$(FF)=IN$      :REM*25Ø
2Ø9Ø PRINT"{2 CRSR DNs}SELECT F
    IELD TYPE:"J$"Ø = ALPHANUM
    ERIC"J$"1 = SUM1"J$"2 = SU
    M2"               :REM*111
21ØØ PRINT"3 = SUM3"J$"4 = TOTA
    L1"J$"5 = TOTAL2"J$"6 = TO
    TAL3"J$"7 = GRAND ";
                      :REM*189
211Ø PRINT"TOTAL"J$"8 = KEYBOAR
    D"J$"9 = DATE":GOSUB1ØØ:A=
    VAL(A$):IFA>9THENA=Ø
                      :REM*86
212Ø FT%(FF)=A:PRINTA:IFA<4THEN
    NP%=NP%+1         :REM*93
213Ø NEXTFF           :REM*56
214Ø NP%=Ø:FORX=ØTONF%:IFFT%(X)
    <4THENNP%=NP%+1   :REM*163
215Ø NEXTX            :REM*145
216Ø FORFF=ØTONF%:IFFT%(FF)>3TH
    EN22ØØ            :REM*49
217Ø PRINT"{2 CRSR DNs}ASK FOR
    "+NF$(FF)+J$+"IN WHAT ORDE
    R (1 -"+STR$(NP%)+"): "
                      :REM*55
218Ø IL=3:GOSUB19Ø:A=VAL(IN$):I
    F(A>NP%)THENA=Ø    :REM*76
219Ø NP%(A)=FF        :REM*92
22ØØ NEXTFF           :REM*114
221Ø PRINT"{2 CRSR DNs}NAME FOR
     DATABASE: ":IL=15:GOSUB19
    Ø:IFIN$=""THEN95Ø :REM*214
222Ø DB$=IN$:PRINT"INSERT DISK
    TO RECEIVE DATABASE";:GOSU
    B9Ø               :REM*144
223Ø CLOSE8:OPEN8,DU%,8,"/"+DB$
    +",S,W":GOSUB28Ø:IFEØTHENG
    OSUB41Ø:GOTO222Ø  :REM*9Ø
224Ø PRINT#8,NF%:PRINT#8,NP%
                      :REM*225
225Ø FORX=ØTONF%:PRINT#8,NF$(X)
    :PRINT#8,FT%(X):PRINT#8,FL
    %(X):PRINT#8,NP%(X):REM*45
226Ø NEXTX:CLOSE8     :REM*66
227Ø GOTO95Ø          :REM*51
228Ø FORX=1TONP%:Y=NP%(X)
                      :REM*25Ø
229Ø IL=FL%(Y):PRINT  :REM*158
23ØØ PRINT"{CRSR DN}"+NF$(Y)+":
     ";:IL=FL%(Y):GOSUB19Ø:IFI
    N$<>""THENFF$(Y)=IN$
                      :REM*186
231Ø IF FF$(Y)=""THENFF$(Y)=" "
                      :REM*196
232Ø NEXTX:RETURN     :REM*37
233Ø :                :REM*93
234Ø GOSUB235Ø:GOTO1Ø4Ø:REM*197
235Ø PRINT"{5 CRSR DNs}NAME OF
    DATABASE: ";:IL=15:GOSUB19
    Ø:IFIN$=""THENRETURN
                      :REM*33
236Ø IFLEFT$(IN$,1)="/"THENIN$=
    RIGHT$(IN$,(B-1))  :REM*29
237Ø IFIN$="$"THENGOSUB172Ø:GOT
    O235Ø             :REM*179
238Ø DB$=IN$:GOTO5ØØ  :REM*15Ø
239Ø PRINT"{SHFT CLR}{CTRL N}{C
    RSR DN}ADD A DOCUMENT{2 CR
    SR DNs}":GOSUB228Ø:TF$="W"
    :GOSUB55Ø:IF(EØ=Ø)THENGOSU
    B56Ø              :REM*1Ø7
24ØØ CLOSE8:GOTO1Ø4Ø  :REM*81
241Ø PRINT"{SHFT CLR}{CTRL N}{C
    RSR DN}DELETE A DOCUMENT{2
     CRSR DNs}":GOSUB48Ø:IF(EØ
    )OR(A$<>"Y")THEN1Ø4Ø
                      :REM*47
242Ø PRINT"{CRSR DN}OK"J$"DELET
    ING: "+IN$:PRINT#15,"SØ:"+
    IN$:GOSUB28Ø:GOTO1Ø4Ø
                      :REM*1Ø5
243Ø PRINT"{SHFT CLR}{CTRL N}{C
    RSR DN}EDIT A DOCUMENT{2 C
    RSR DNs}":GOSUB48Ø:IF(EØ)O
    R(A$<>"Y")THEN1Ø4Ø:REM*17Ø
244Ø NI$=IN$:GOSUB228Ø:TF$="W":
    IN$=NI$:PRINT#15,"SØ:"+IN$
    :GOSUB28Ø         :REM*99
245Ø GOSUB4ØØ:IF(EØ=Ø)THENGOSUB
    56Ø               :REM*2Ø6
246Ø CLOSE8:GOTO1Ø4Ø  :REM*1Ø9
247Ø PRINT"{SHFT CLR}{CTRL N}{C
    RSR DN}VIEW A DOCUMENT{2 C
    RSR DNs}"A$="Y":GOSUB48Ø:I
    FA$<>"N"THEN1Ø4Ø  :REM*1Ø4
248Ø GOTO247Ø          :REM*8
249Ø T1=Ø:T2=Ø:T3=Ø:FORX=ØTONF%
                      :REM*177
25ØØ IFFT%(X)=1THENT1=T1+VAL(FF
    $(X))             :REM*129
251Ø IFFT%(X)=2THENT2=T2+VAL(FF
    $(X))             :REM*1Ø8
252Ø IFFT%(X)=3THENT3=T3+VAL(FF
    $(X))             :REM*58
253Ø NEXTX            :REM*31
```

```
254Ø FORY=ØTONF%          :REM*25
255Ø IFFT%(Y)=4THENFF$(Y)=STR$(
     T1)                  :REM*29
256Ø IFFT%(Y)=5THENFF$(Y)=STR$(
     T2)                  :REM*53
257Ø IFFT%(Y)=6THENFF$(Y)=STR$(
     T3)                  :REM*2Ø5
258Ø IFFT%(Y)=7THENFF$(Y)=STR$(
     T1+T2+T3)            :REM*69
259Ø IFFT%(Y)=8THENPRINTNF$(Y)+
     ": ";:IL=FL%(Y):GOSUB19Ø:F
     F$(Y)=IN$            :REM*1Ø5
26ØØ IFFT%(Y)=9THENFF$(Y)=STR$(
     MO)+" /"+STR$(DA)    :REM*28
261Ø NEXTY                :REM*1Ø9
262Ø RETURN               :REM*192
263Ø A$="...................":
     A$=A$+A$+A$+A$       :REM*15Ø
264Ø FORX=ØTONF%:FF$(X)=LEFT$(A
     $,(FL%(X))):NEXT:RETURN
                          :REM*73
265Ø A$="{2Ø SPACEs}":A$=A$+A$+
     A$+A$                :REM*126
266Ø FORX=ØTONF%:A=LEN(FF$(X)):
     B=FL%(X)             :REM*82
267Ø IF(A<B)THENFF$(X)=FF$(X)+R
     IGHT$(A$,(B-A))      :REM*148
268Ø NEXT:RETURN          :REM*21
269Ø SYS(ML+9):FORFF=ØTONF%:IN$
     =FF$(FF):GOSUB32Ø:NEXT
                          :REM*1Ø
27ØØ OPEN4,PD,PS:OPEN5,PD,PT
                          :REM*52
271Ø PRINT"{2 CRSR DNs}{CTRL 7}
     PRINT TO LINE#:{CTRL 1} ";
     :IL=2                :REM*18
272Ø GOSUB19Ø:L=VAL(IN$):IF(L<1
     ) OR (L>49)THENL=49
                          :REM*248
273Ø FORX=ØTOL:PRINT#4,J$;:PRIN
     T#5,Q$(Ø)+FC$(X); :REM*164
274Ø POKE255,(X):SYS(ML+12):NEX
     T:CLOSE4:CLOSE5      :REM*54
275Ø INPUT"{2 CRSR DNs}PRINT AG
     AIN{2 SPACEs}N {4 CRSR LFs
     }";A$:IFA$="Y"THEN27ØØ
                          :REM*6
276Ø GOTO71Ø              :REM*31
```

Listing 2. Editor-file writer for the C-64.

```
Ø REM CREATE EDITOR.64 ML FOR F
  ORM WRITER              :REM*125
5 OPEN 8,8,8,"EDITOR.64 ML,P,W"
                          :REM*17Ø
1Ø READ A$:IF A$="-1" THEN CLOS
  E8:END                  :REM*78
15 IF LEN(A$)<62 THEN 55
                          :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
  2Ø)+MID$(A$,43,2Ø)      :REM*242
25 FOR I=1 TO 3Ø          :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                          :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55               :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55               :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                          :REM*67
5Ø NEXT:GOTO 1Ø           :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 7Ø                    :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
  A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
  ):GOTO 7Ø               :REM*137
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
  Ø)+RIGHT$(A$,LEN(A$)-42)
                          :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                          :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55               :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55               :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                          :REM*148
95 NEXT:GOTO 1Ø           :REM*16Ø
1ØØ REM C64 HEX DATA FOR FORM W
    RITER                 :REM*45
1Ø1 DATA ØØC Ø4CF8C14C24C24CEA C
    34C58C34C81C34CD4C2 4C2DCØ4
    C67CØØØØØØØØ         :REM*2Ø1
1Ø2 DATA ØØØØØØØØØØØØØØØ5Ø32 Ø
    ØØØØØØØØØØØØA5FF48 2Ø6ØCØ2
    Ø13C4A99C85FC         :REM*57
1Ø3 DATA A9ØØ85FB68AAA9Ø1AØØØ 2
    ØBAFFA5B3A6FDA4FE2Ø BDFFA9F
    BA2ØØAØBØ2ØD8         :REM*91
1Ø4 DATA FFA5Ø1Ø9Ø185Ø16ØA5Ø1 2
    9FE85Ø16ØA2Ø12ØC6FF 2ØE4FF2
    ØE4FFAD8DØ2DØ         :REM*178
1Ø5 DATA FB2ØA3CØFØ1EA9ØD2ØD2 F
    F2ØE4FFAA2ØE4FF2ØCD BDA92Ø2
    ØD2FF2ØE4FFFØ         :REM*242
1Ø6 DATA DD2ØD2FFDØF6A9Ø12ØC3 F
    F2ØCCFF6Ø2ØE4FF85FF 2ØE4FFØ
    5FF6ØAD29CØ2Ø         :REM*152
1Ø7 DATA D6C18CDCCØ8DDDCØAD27 C
    Ø2ØD6C18CE7CØ8DE8CØ AØØØB9D
    6CØFØ8Ø98Ø99          :REM*4
1Ø8 DATA CØØ7C8DØF36ØØCØ9ØE Ø5 3
    A2Ø3Ø3Ø2ØØ3ØFØC15ØD ØE3A2Ø3
    Ø3ØØØ2ØFØCØ4C         :REM*246
1Ø9 DATA 3EC2382ØFØFFCØ27FØØ9 A
    91D2ØD2FFEE27CØ6ØAE 27CØE Ø4
    FDØØ16ØEE2BCØ         :REM*26
11Ø DATA EE27CØ6Ø2Ø16C14C3EC2 3
    82ØFØFFCØØØFØØ9A99D 2ØD2FFC
    E27CØ6ØAE27CØ         :REM*1Ø7
111 DATA DØØ16ØCE2BCØCE27CØ6Ø 3
    82ØFØFFEØØØFØØBA991 2ØD2FFC
    E29CØ4C3EC2AE         :REM*111
112 DATA 29CØDØØ34C3EC2CE2CCØ C
    E29CØ4C3EC22Ø16C1AD 29CØ2ØF
    AC4AC27CØC8CØ         :REM*193
113 DATA 5ØFØØ8B1FB8891FBC8DØ F
    388A92Ø91FB4C3EC2AD 27CØC94
    FDØØ34C3EC2AD         :REM*187
114 DATA 29CØ2ØFAC4AØ4F88B1FB C
    891FB88CC27CØDØF4A9 2Ø91FB4
    C3EC2382ØFØFF         :REM*75
115 DATA AØØØ182ØFØFFA9ØØ8D27 C
    Ø8D2BCØ382ØFØFFEØ17 FØØBA91
    12ØD2FFEE29CØ         :REM*164
116 DATA 4C3EC2AE29CØEØ31DØØ3 4
    C3EC2EE2CCØEE29CØ4C 3EC2AØF
    F38C8E9ØABØFB         :REM*2Ø5
117 DATA 69ØA18693Ø489818693Ø A
    8686Ø2ØE4FFFØFB6ØAD 8DØ2C9Ø
    5DØ332Ø6CØAØ          :REM*1
118 DATA ØØ84FBA9AØ85FCA92Ø91 F
    BC8DØFBE6FCA6FCEØBØ DØF3AD2
    1DØ48A9Ø18D21         :REM*5Ø
119 DATA DØA9932ØD2FF688D21DØ 2
    Ø6ØCØA9CØ85F8A9132Ø D2FFA9Ø
    Ø8D27CØ8D29CØ         :REM*242
12Ø DATA 8D2BCØ8D2CCØ2Ø3AC42Ø A
    ECØAD29CØ2ØFAC42Ø24 C42ØEBC
    1482Ø29C468C9         :REM*1Ø8
121 DATA 85DØØ34CD7C2C91BFØF9 C
    9ØDDØØ34C9EC1C993DØ Ø34CF1C
    1C913DØØ34C2B         :REM*131
122 DATA C2C9Ø9DØØ62ØB6C24C3E C
    2C911DØØ34CBØC1C91D DØØ34CE
    ACØC991DØØ34C         :REM*1Ø1
123 DATA 34C1C99DDØØ34C1ØC1C9 1
    4DØØ34C58C1C994DØØ3 4C79C12
    ØAFC24CEACØAC         :REM*195
124 DATA 27CØ91FB6ØØØA9Ø58DB5 C
    2AD8DØ2C9Ø2FØØ92ØFØ CØCEB5C
    2DØF86Ø2Ø16C1         :REM*214
125 DATA CEB5C2DØF86Ø2Ø6ØCØA9 Ø
    Ø85F82Ø22C593ØDØD77 4149542
    Ø412Ø4D4F4D45         :REM*238
126 DATA 4E542EØD72454144494E 4
    72Ø53435245454E2E2E 2EØDØDØ
    ØA9ØØ85FF858C         :REM*2Ø6
127 DATA 2ØFAC4AØØØB1FBC95EDØ Ø
    32Ø2BC3C8CØ5Ø9ØF2E6 8CA58CC
    D25CØ9ØE4A6FF         :REM*12
128 DATA 4C59CØA58CA6FF9DØØ9C 9
    89DØØ9DA2ØØE8C8CØ5Ø 9ØØ16ØB
    1FBC95EDØF38A         :REM*216
129 DATA A6FF9DØØ9EE8FØØ386FF 6
    Ø6868A5FF4C59CØ2Ø6Ø CØAØØØA
    9ØØ85FBA9AØ85         :REM*149
13Ø DATA FCA9ØØ85FDA9BØ85FEB1 F
    B91FDC8DØF9E6FCE6FE A5FCC9B
    ØDØEF4C59CØ2Ø         :REM*2Ø8
131 DATA 6ØCØA5FF2ØEEC4A2Ø42Ø C
    9FFAØØØB1FBC95FFØØF 2ØD2FFC
    8CØ5ØDØF22ØCC         :REM*13
132 DATA FF4C59CØØØ8CA4C3AØØØ B
    919CØFØØ62ØD2FFC8DØ F5ACA4C
    34C99C3Ø08DBB         :REM*122
133 DATA C3296ØDØØ3A92Ø6ØADBB C
    33ØØ6296ØC96ØFØ12ØE BBC32A2
    EBBC36A6EBBC3         :REM*52
134 DATA 4EBBC3ADBBC36ØADBBC3 2
    95F186Ø2Ø6ØCØA6FFBD ØØ9D48B
    DØØ9C2ØEEC468         :REM*28
135 DATA 1865FB9ØØ2E6FC85FB2Ø 1
    3C4A4B388B1FD91FB88 1ØF94C5
    9CØAØØØB14785         :REM*25 ►
```

```
136 DATA B3C8B14785FDC8B14785 F
    E6ØA9ØØ85CC6ØA9FF85 CC6ØØØA
    9ØØ85FBA9BØ85       :REM*1Ø3
137 DATA FC4C42C4A9ØØ85FBA9AØ 8
    5FCAC2CCØFØØF18A5FB 6D24CØ8
    5FB9ØØ2E6FC88       :REM*129
138 DATA DØF1AD2BCØ1865FB85FB A
    9ØØ65FC85FCA9ØØ85FD A9Ø485F
    EA9178D2EC4AØ       :REM*196
139 DATA 27B1FB2ØBCC391FD881Ø F
    618A5FB6D24CØ85FBA9 ØØ65FC8
    5FC18A5FD6928       :REM*127
14Ø DATA 85FD9ØØ2E6FECE2EC41Ø D
    66Ø2ØA2C44CD2C4A9ØØ 8DECC48
    DEDC4A211186E       :REM*86
141 DATA EDC46EECC46EE9C46EE8 C
    49Ø1318ADEAC46DECC4 8DECC4A
    DEBC46DEDC48D       :REM*176
142 DATA EDC4CADØDC6ØADE8C418 6
    DE6C48DEAC4ADE9C46D E7C48DE
    BC46ØØØØØØØØ       :REM*253
143 DATA ØØØØØØØØA2ØØ8EE6C4A2 B
    Ø8EE7C4DØØAA2ØØ8EE6 C4A2AØ8
    EE7C48DEAC4A9       :REM*24
144 DATA ØØ8DEBC48DE9C4A95Ø8D E
    8C42Ø9CC4ADEAC485FB ADEBC48
    5FC6Ø488A4898       :REM*38
145 DATA 48AØØØBAFEØ4Ø1DØØ3FE Ø
    5Ø1BDØ4Ø185C3BDØ5Ø1 85C4B1C
    3FØØ52ØD2FF9Ø       :REM*246
146 DATA E468A868AA686Ø :REM*65
147 DATA -1             :REM*1
```

Listing 3. Editor-file writer for the C-128.

```
1Ø REM C128 ML MAKER    :REM*247
15 OPEN 8,8,8,"EDITOR.128 ML,P,
   W"                   :REM*26
2Ø FAST                 :REM*93
25 READ A$:IF A$="-1" THEN CLOS
   E8:END               :REM*189
3Ø IF LEN(A$)<62 THEN 6Ø
                        :REM*22Ø
35 B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,29)   :REM*36
4Ø N=LEN(B$)/2          :REM*33
45 FOR I=1 TO N         :REM*43
5Ø H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                    :REM*217
55 PRINT#8,CHR$(H);:NEXT:GOTO 2
   5                    :REM*217
6Ø IF LEN(A$)<2Ø THEN B$=A$:GOT
   O 75                 :REM*229
65 IF LEN(A$)<42 THEN B$=MID$(A
   $,1,2Ø)+MID$(A$,22,(LEN(A$)-
   21)):GOTO 75         :REM*167
7Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,LEN(A$)-42)
                        :REM*95
75 N=LEN(B$)/2          :REM*94
8Ø FOR I=1 TO N         :REM*76
85 H$=MID$(B$,I*2-1,2):H=DEC(H$
   )                    :REM*246
9Ø PRINT#8,CHR$(H);:NEXT:GOTO 2
   5                    :REM*246
95 REM C128 HEX DATA FOR FORM W
   RITER                :REM*11
1ØØ DATA ØØ134CCD144CF9144CBE 1
    64C2C164C55164CA815 4C2D134
    C3E13ØØØØØØØ        :REM*84
1Ø1 DATA ØØØØØØØØØØØØØØØ5Ø32 Ø
    ØØØØØØØØØØØ6Ø48A9 ØE8DØØF
    F686Ø48A9ØØ8D       :REM*253
1Ø2 DATA ØØFF686ØA2Ø12ØC6FF2Ø E
    4FF2ØE4FFA5D3DØFC2Ø 7913FØ1
    EA9ØD2ØD2FF2Ø        :REM*7
1Ø3 DATA E4FFAA2ØE4FF2Ø328EA9 2
    Ø2ØD2FF2ØE4FFFØDE2Ø D2FFDØF
    6A9Ø12ØC3FF2Ø        :REM*63
1Ø4 DATA CCFF6Ø2ØE4FF85FF2ØE4 F
    FØ5FF6ØAD29132ØAC14 8CB2138
    DB313AD27132Ø        :REM*187
1Ø5 DATA AC148CBD138DBE13AØØØ B
    9AC13FØØ8Ø98Ø99CØØ7 C8DØF36
    ØØCØ9ØEØ53A2Ø        :REM*19Ø
1Ø6 DATA 3Ø3Ø2Ø03ØFØC15ØDØE3A 2
    Ø3Ø3ØØØ2ØC6134C1315 382ØFØF
    FCØ27FØØ9A91D        :REM*236
1Ø7 DATA 2ØD2FFEE27136ØAE2713 E
    Ø4FDØØ16ØEE2B13EE27 136Ø2ØE
    C134C13153820        :REM*231
1Ø8 DATA FØFFCØØØFØØ9A99D2ØD2 F
    FCE27136ØAE2713DØØ1 6ØCE2B1
    3CE27136Ø382Ø        :REM*149
1Ø9 DATA FØFFEØØØFØØBA9912ØD2 F
    FCE29134C1315AE2913 DØØ34C1
    315CE2C13CE29        :REM*76
11Ø DATA 134C13152ØEC13AD2913 2
    ØE717AC2713C8CØ5ØFØ Ø8B1FB8
    891FBC8DØF388        :REM*151
111 DATA A92Ø91FB4C1315AD2713 C
    94FDØØ34C1315AD2913 2ØE717A
    Ø4F88B1FBC891        :REM*12
112 DATA FB88CC2713DØF4A92Ø91 F
    B4C13153820FØFFAØØØ 182ØFØF
    FA9ØØ8D27138D        :REM*239
113 DATA 2B13382ØFØFFEØ17FØØB A
    9112ØD2FFEE29134C13 15AE291
    3EØ31DØØ34C13        :REM*1Ø8
114 DATA 15EE2C13EE29134C1315 A
    ØFF38C8E9ØABØFB69ØA 1869Ø4
    89818693ØA868        :REM*218
115 DATA 6Ø2ØE4FFFØFB6ØA5D3C9 Ø
    9DØ332Ø2E13AØØØ84FB A9AØ85F
    CA92Ø91FBC8DØ        :REM*7
116 DATA FBE6FCA6FCEØBØDØF3AD 2
    1DØ48A9Ø18D21DØA993 2ØD2FF6
    88D21DØ2Ø2E13        :REM*255
117 DATA A9CØ85F8A9132ØD2FFA9 Ø
    Ø8D27138D29138D2B13 8D2C132
    Ø27172Ø8413AD        :REM*116
118 DATA 29132ØE7172ØØFI72ØC1 1
    4482Ø151768C985DØØ3 4CA815C
    91BFØF9C9ØDDØ        :REM*5Ø
119 DATA Ø34C7414C993DØØ34CC7 1
    4C913DØØ34CØØ15C9Ø9 DØØ62Ø8
    B154C1315C911        :REM*181
12Ø DATA DØ34C8614C91DDØØ34C C
    Ø13C991DØØ34CØA14C9 9DDØØ34
    CE613C914DØØ3        :REM*127
121 DATA 4C2E14C994DØØ34C4F14 2
    Ø84154CCØ13AC271391 FB6ØØØA
    9Ø58D8A15A5D3        :REM*12
122 DATA C9Ø2FØØ92ØC613CE8A15 D
    ØF86Ø2ØEC13CE8A15DØ F86Ø2Ø2
    E13A9ØØ85F82Ø        :REM*15
123 DATA 7DFF93ØDØD7741495420 4
    12Ø4D4F4D454E542EØD 7245414
    4494E472Ø5343        :REM*72
124 DATA 5245454E2E2E2EØDØDØØ A
    9ØØ85FF858C2ØE717AØ ØØB1FBC
    95EDØØ32ØFF15        :REM*136
125 DATA C8CØ5Ø9ØF2E68CA58CCD 2
    5139ØE4A5FF4C3613A5 8CA6FF9
    DØØ9C989DØØ9D        :REM*39
126 DATA A2ØØE8C8CØ5Ø9ØØ16ØB1 F
    BC95EDØF38AA6FF9DØØ 9EE8FØØ
    386FF6Ø6868A5        :REM*58
127 DATA FF4C36132Ø2E13AØØØA9 Ø
    Ø85FBA9AØ85FCA9ØØ85 FDA9BØ8
    5FEB1FB91FDC8        :REM*62
128 DATA DØF9E6FCE6FEA5FCC9BØ D
    ØEF4C36132Ø2E13A5FF 2ØDB17A
    2Ø42ØC9FFAØØØ        :REM*139
129 DATA B1FBC95FFØØF2ØD2FFC8 C
    Ø5ØDØF22ØCCFF4C3613 ØØ8C781
    6AØØØB91913FØ        :REM*74
13Ø DATA Ø62ØD2FFC8DØF5AC7816 4
    C6D16ØØ8D8F16296ØDØ Ø3A92Ø6
    ØAD8F163ØØ629        :REM*178
131 DATA 6ØC96ØFØ12ØE8F162A2E 8
    F166A6E8F164E8F16AD 8F166ØA
    D8F16295F186Ø        :REM*116
132 DATA 2Ø2E13A6FFBDØØ9D48BD Ø
    Ø9C2ØDB17681865FB9Ø Ø2E6FC8
    5FB2ØED16AØØØ        :REM*49
133 DATA A2Ø1A9FD2Ø74FF91FBC8 C
    4B39ØF24C3613AØØØA2 Ø1A9FD2
    Ø74FF85B3C8A2        :REM*39
134 DATA Ø1A9FD2Ø74FF48C8A2Ø1 A
    9FD2Ø74FF85FE6885FD 6ØA9ØØ8
    D27ØA6ØA9FF8D        :REM*128
135 DATA 27ØA6ØØØA9ØØ85FBA9BØ 8
    5FC4C2F17A9ØØ85FBA9 AØ85FCA
    C2C13FØØF18A5        :REM*187
136 DATA FB6D241385FB9ØØ2E6FC 8
    8DØF1AD2B131865FB85 FBA9ØØ6
    5FC85FCA9ØØ85        :REM*114
137 DATA FDA9Ø485FEA9178D1B17 A
    Ø27B1FB2Ø9Ø1691FD88 1ØF618A
    5FB6D241385FB        :REM*184
138 DATA A9ØØ65FC85FC18A5FD69 2
    885FD9ØØ2E6FECE1B17 1ØD66Ø2
    Ø8F174CBF17A9        :REM*13Ø
139 DATA ØØ8DD9178DDA17A21118 6
    EDA176ED9176ED6176E D5179Ø1
    318ADD7176DD9        :REM*135
14Ø DATA 178DD917ADD8176DDA17 8
    DDA17CADØDC6ØADD517 186DD31
    78DD717ADD617        :REM*173
141 DATA 6DD4178DD8176ØØØØØØØ Ø
    ØØØØØØØØA2ØØ8ED317 A2BØ8ED
    417DØØAA2ØØ8E        :REM*87
142 DATA D317A2AØ8ED4178DD717 A
    9ØØ8DD8178DD617A95Ø 8DD5172
    Ø8917ADD71785        :REM*2Ø
143 DATA FBADD81785FC6Ø :REM*33
144 DATA -1             :REM*2
```

■

Finally, there's a beauty contest that any GEOS owner can win—provided you have the right tools. The GEOS Desktop Publishing Contest. All you need to win is your Commodore, your trusty GEOS applications (like geoWrite, geoPublish, Graphics Grabber, etc.) and your own imagination to win in any four categories and walk away with all kinds of prizes.

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Just send us your best looking publication (designed using GEOS applications)—printed out and on disk—by June 30, 1988. There are four categories, each with a Laser Printer and Dot Matrix Printer winner (except for the Poster category, which is Laser Printer only). Which means that there are seven first prizes. Seven second prizes. And seven thirds.

And each prize consists of lots more prizes.

So boot up and get down to designing your best layout. Then send it in with the information required below. You could win fortune—and fame, because the winners will be printed on these very pages this Fall.

Categories

FLYER—Any one-page advertisement, handbill or data sheet. Two divisions: Dot Matrix and Laser Printer.

NEWSLETTER—Two or more pages, including newsletters, brochures, reports. Two divisions: Dot Matrix and Laser Printer.

POSTER—One page, enlarged at least 200%. Laser Printer only.

OPEN DESIGN—Anything goes! No page limitation. Best use for desktop publishing. Two divisions: Dot Matrix and Laser Printer.

Seven First Prizes!

- $1,000 cash
- Publication of your entry in RUN Magazine
- Complete library of C64 or C128 GEOS applications from Berkeley Softworks
- Commodore peripherals: 1670 1200 Baud Modem, 1351 Mouse and your choice of a 1764 or 1750 RAM Expansion Module
- Six month subscription to Q-Link, the telecommunications service from Quantum Computer Services
- Twenty five pages of laser printed output from Laser Direct
- Twelve month subscription to RUN magazine

Seven Second Prizes!

- Complete library of C64 or C128 GEOS applications from Berkeley Softworks
- Commodore peripherals: 1670 1200 Baud Modem and your choice of a 1764 or 1750 RAM Expansion Module or 1351 Mouse
- Three month subscription to Q-Link, the telecommunications service from Quantum Computer Services.
- Ten pages of laser printed output from Laser Direct
- Twelve month subscription to RUN magazine

Seven Third Prizes!

- Your choice of any five C64 or C128 GEOS applications from Berkeley Softworks
- Commodore peripherals: 1670 1200 Baud Modem and your choice of a 1764 or 1750 RAM Expansion Module or 1351 Mouse
- Three month subscription to Q-Link, the telecommunications service from Quantum Computer Services.
- Five pages of laser printed output from Laser Direct
- Twelve month subscription to RUN magazine

Official Rules

1. Employees of Berkeley Softworks, Quantum Computer Services, Laser Direct, RUN Magazine, their advertising and promotional agencies and their immediate families are not eligible to enter the contest.

2. Each entry must be wholly the product of the developer in whose name the entry has been submitted. The entry may not have been published prior to this contest. Copyrighted images are ineligible.

3. Entries must be produced with GEOS or GEOS based applications (e.g. geoWrite, geoWrite Workshop, geoPaint, geoPublish, etc.).

4. Entries must be submitted in both printed output form (dot matrix or laser printed) and disk in 1541/1571 format. The following should be clearly marked on both the printout and the disk:
   A. Contestant's name, address and phone number
   B. Occupation (optional)
   C. The GEOS based application package(s) used to create the entry
   D. Intended use for the entry, if other than just for this contest (e.g. user newsletter, school, business, group etc.)

5. Entries become the property of Berkeley Softworks, which reserves the right to adapt, use or publish all entries received. No disks will be returned, so be sure to make a copy of your entry before you submit it to the contest.

6. Deadline for entries is June 30, 1988. Mail entries to Berkeley Softworks, P.O. Box 1835, Berkeley, CA, 94701 Attn: GEOS Desktop Publishing Contest.

7. Contestants may enter multiple categories, but may only submit one entry per category per division (e.g. one entry in the Flyer category, Dot Matrix division *and* one entry in the Flyer category, Laser Printer division). Regardless of the number of categories you enter, you will only be eligible to win one prize.

8. Final judging will be performed by the staff of RUN Magazine. The decisions of the judges are final in all respects. This includes decisions regarding creativity, similarity among entries and general suitability.

9. This contest is void where prohibited by law. All federal, state and local taxes are the sole responsibility of the winners.

General Conditions

- Entries will be judged on creativity, originality, composition, layout, content and overall design.
- Make sure your mailer will protect your printout and disk from damage. Affix sufficient first class postage. Mail your printout, disk and official entry blank to the above address before the June 30, 1988, deadline.

- Winners will be announced by September, 1988.

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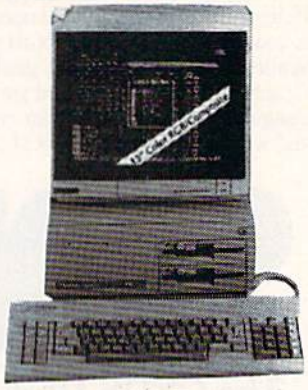

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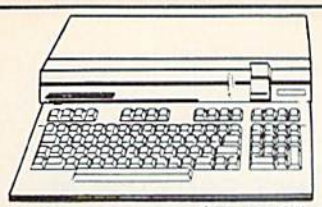

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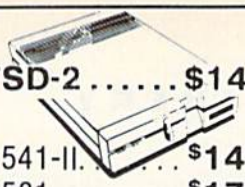

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From p. 58.

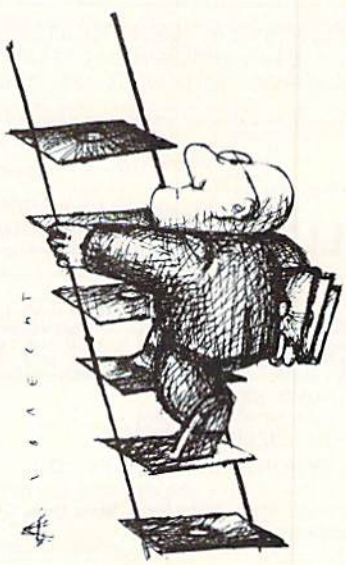
```
1Ø1Ø IFA$="Y"THENRUN    :REM*23Ø
1Ø2Ø PRINT:PRINT"BYE":END
                        :REM*173
1Ø3Ø IFRM(Ø)<>12ANDRM(Ø)<>15THE
     NPRINT"WHE-E-E-E!!!":GOTO5
     5Ø                 :REM*245
1Ø4Ø PRINT"{CRSR DN}YOU FLY INT
     O THE AIR AND LAND VERY HA
     RD ON ROCKS!!":GOTO42Ø
                        :REM*57
1Ø5Ø PRINT"YOU CAN'T.":GOTO55Ø
                        :REM*128
1Ø6Ø PRINT"GOD HELPS THOSE WHO
     HELP THEMSELVES.":GOTO55Ø
                        :REM*148
1Ø7Ø IFRM(Ø)<>17ANDRM(Ø)<>19AND
     RB(1)<>RM(Ø)THENPRINT"FEED
      WHAT?":GOTO55Ø    :REM*137
1Ø8Ø IFAB$(1)=""THENPRINTC$(3):
     GOTO55Ø            :REM*219
1Ø9Ø IFAB$(1)="DOG"GOTO117Ø
                        :REM*51
11ØØ IFAB$(1)="SNAKE"GOTO122Ø
                        :REM*186
111Ø IFAB$(1)="RABBIT"GOTO113Ø
                        :REM*93
112Ø PRINTC$(3):GOTO55Ø :REM*73
113Ø IFRB(1)<>RM(Ø)THENPRINT"I
     SEE NO RABBIT.":GOTO59Ø
                        :REM*219
114Ø IFTH(9)<>22THENPRINTC$(7):
     GOTO55Ø            :REM*36
115Ø TH(9)=16:PRINT"THE RABBIT
     HOPS AWAY!":RB(Ø)=Ø:POKEV+
     21,PEEK(V+21)AND(255-1)
                        :REM*219
116Ø RB(1)=Ø:AV(Ø)=AV(Ø)-1:GOTO
     55Ø                :REM*124
117Ø IFRM(Ø)<>19THENPRINT"I SEE
      NO DOG HERE.":GOTO55Ø
                        :REM*15Ø
118Ø IFTH(1)<>22THENPRINTC$(7):
     GOTO55Ø            :REM*36
119Ø IFRB(1)=19THENPRINT"THE DO
     G IS DISTRACTED BY THE RAB
     BIT.":GOTO55Ø      :REM*146
12ØØ PRINT"THE DOG TAKES THE BO
     NE AND SLINKS AWAY.":TH(1)
     =Ø:TH(8)=Ø         :REM*176
121Ø POKEV+21,PEEK(V+21)AND(255
     -2):AV(Ø)=AV(Ø)-1:OB(Ø)=-O
     B(Ø):GOTO55Ø       :REM*62
122Ø IFRM(Ø)<>17THENPRINT"I SEE
      NO SNAKE!":GOTO55Ø :REM*4
123Ø IFTH(4)<>22THENPRINTC$(7):
     GOTO55Ø            :REM*229
124Ø PRINT"THE SNAKE EATS THE M
     OUSE AND LEAVES.":TH(4)=Ø:
     TH(3)=Ø            :REM*94
125Ø POKEV+21,PEEK(V+21)AND(255
     -2):AV(Ø)=AV(Ø)-1:OB(1)=-O
     B(1):GOTO55Ø       :REM*128
126Ø IFTH(6)<>22THENPRINTC$(4):
     GOTO55Ø            :REM*237
127Ø IFAB$(1)<>"ROCK"ANDAB$(1)<
     >""THENPRINTC$(4):GOTO55Ø
                        :REM*136
128Ø IFRM(Ø)<>18GOTO131Ø:REM*3Ø
129Ø GOSUB234Ø:PRINT"THE BOOBY
     TRAP EXPLODES AND VANISHES
     !":TH(5)=Ø:OB(2)=-OB(2)
                        :REM*13Ø
13ØØ AV(Ø)=AV(Ø)-1:TH(6)=RM(Ø):
     GOTO55Ø            :REM*234
131Ø AV(Ø)=AV(Ø)-1      :REM*31
132Ø IFRM(Ø)<>17THENPRINT"YOU T
     HROW THE ROCK.":TH(6)=RM(Ø
     ):GOTO55Ø          :REM*166
133Ø PRINT"THE SNAKE CRAWLS SLO
     WLY AWAY.":TH(6)=Ø:TH(3)=Ø
     :OB(1)=-OB(1):GOTO55Ø
                        :REM*67
134Ø IFRM(Ø)<>2ØTHENPRINTC$(3):
     GOTO55Ø            :REM*242
135Ø IFTH(11)<>22THENPRINT"YOU
     HAVE NO LETTER!":GOTO55Ø
                        :REM*16Ø
136Ø PRINT"THE LETTER TEARS UP!
     !"                 :REM*152
137Ø TH(11)=Ø:GOTO55Ø   :REM*68
138Ø AV(RM(Ø)-1)=Ø:GOTO53Ø
                        :REM*238
139Ø PRINT"{SHFT CLR}":PRINT"YO
     U HAVE THESE THINGS:"
                        :REM*127
14ØØ FORX=1TO11:IFTH(X)=22THENP
     RINTT$(X-1,1)      :REM*38
141Ø NEXT               :REM*2
142Ø INPUT"{CRSR DN}PRESS RETUR
     N TO CONTINUE ";A$:GOTO53Ø
                        :REM*64
143Ø PRINT"SORRY YOU WANT TO QU
     IT. "              :REM*133
144Ø GOTO99Ø            :REM*14
145Ø POKE5328Ø,3:POKE53281,3:PR
     INT"{CTRL 1}":IFRM(Ø)>1ØTH
     ENX=RM(Ø)-1Ø:GOTO149Ø
                        :REM*233
146Ø X=RM(Ø)            :REM*173
147Ø ONXGOSUB151Ø,152Ø,153Ø,155
     Ø,156Ø,16ØØ,163Ø,165Ø,167Ø
     ,168Ø              :REM*152
148Ø RETURN             :REM*8Ø
149Ø ONXGOSUB171Ø,173Ø,174Ø,176
     Ø,178Ø,182Ø,185Ø,187Ø,192Ø
     ,199Ø              :REM*185
15ØØ RETURN             :REM*1Ø8
151Ø PRINT"{SHFT CLR}{4 CRSR DN
     s}":PRINTPI$(1):PRINT"{HOM
     E}{9 CRSR DNs}"PI$(2):RETU
     RN                 :REM*59
152Ø PRINT"{SHFT CLR}{7 CRSR DN
     s}":PRINTPI$(2):PRINT"{HOM
     E}{6 CRSR DNs}"PI$(Ø):RETU
     RN                 :REM*49
153Ø PRINT"{SHFT CLR}{CRSR DN}"
     :PRINT"{2 CRSR DNs}"PI$(Ø)
     :PRINT"{HOME}{4 CRSR DNs}"
     PI$(7)             :REM*199
154Ø PRINT"{HOME}{8 CRSR DNs}"P
     I$(5)"{HOME}{8 CRSR DNs}"P
     I$(4):RETURN       :REM*214
155Ø PRINT"{SHFT CLR}{4 CRSR DN
     s}"PI$(Ø):PRINT"{HOME}{6 C
     RSR DNs}"PI$(1):PRINT"{HOM
     E}{3 CRSR DNs}"PI$(7):RETU
     RN                 :REM*26
156Ø PRINT"{SHFT CLR}{4 CRSR DN
     s}"PI$(Ø):PRINT"{HOME}{6 C
     RSR DNs}"PI$(1)    :REM*49
157Ø PRINT"{HOME}{1Ø CRSR DNs}"
                        :REM*183
158Ø PRINT"{4 CRSR RTs}&&&#%&%&
     %&%%%              :REM*182
159Ø PRINT"&&&%&%&%&%&&&%%%%&&
     %&":RETURN         :REM*136
16ØØ PRINT"{SHFT CLR}{6 CRSR DN
     s}"PI$(Ø)          :REM*28
161Ø PRINT"{HOME}{12 CRSR DNs}{
     COMD 4}"PI$(3):PRINT"{HOME
     }{6 CRSR DNs}"PI$(1)
                        :REM*28
162Ø PRINT"{HOME}{12 CRSR DNs}"
     PI$(6):RETURN      :REM*239
163Ø POKE53281,12:POKE5328Ø,12
                        :REM*88
164Ø PRINT"{SHFT CLR}{4 CRSR DN
     s}"PI$(Ø):PRINT"{HOME}{3 C
     RSR DNs}"PI$(7):PRINT"{HOM
     E}{7 CRSR DNs}"PI$(1):RETU
     RN                 :REM*68
165Ø PRINT"{SHFT CLR}{2 CRSR DN
     s}"PI$(7):PRINT"{HOME}{7 C
     RSR DNs}"PI$(4)    :REM*71
166Ø PRINT"{HOME}{8 CRSR DNs}"P
     I$(1)"{HOME}{12 CRSR DNs}"
     PI$(6):RETURN      :REM*115
167Ø PRINT"{SHFT CLR}{13 CRSR D
     Ns}{CTRL 6}"PI$(3)"{HOME}{
     6 CRSR DNs}"PI$(Ø)"{HOME}{
     7 CRSR DNs}"PI$(1):RETURN
                        :REM*2Ø3
168Ø PRINT"{SHFT CLR}{2 CRSR DN
     s}"PI$(1):PRINT"{HOME}{3 C
     RSR DNs}"PI$(7):PRINT"{HOM
     E}{7 CRSR DNs}"PI$(5)
                        :REM*49
169Ø PRINT"{COMD 1}*{5 CRSR RTs
     }*{9 CRSR RTs}*"   :REM*19Ø
17ØØ PRINT"{2 CRSR RTs}*{16 CRS
     R RTs}*{2 CRSR RTs}*{CTRL
     1}":RETURN         :REM*2Ø
171Ø PRINT"{SHFT CLR}{5 CRSR DN
     s}"PI$(Ø)"{HOME}{2 CRSR DN
     s}"PI$(7)"{HOME}{3 CRSR DN
     s}"PI$(1)          :REM*146
172Ø PRINT"{HOME}{6 CRSR DNs}"P
     I$(5):RETURN       :REM*48
173Ø PRINT"{SHFT CLR}{11 CRSR D
     Ns}{CTRL 1}"PI$(3):PRINT"{
     HOME}{5 CRSR DNs}"PI$(Ø)"{
     HOME}{8 CRSR DNs}"PI$(1):R
     ETURN              :REM*43
174Ø PRINT"{SHFT CLR}{4 CRSR DN
     s}"PI$(1)"{HOME}{1Ø CRSR D
     Ns}"PI$(4)"{HOME}{7 CRSR D
     Ns}"PI$(5)         :REM*1Ø5
175Ø RETURN             :REM*99
176Ø PRINT"{SHFT CLR}{1Ø CRSR D
     Ns}"PI$(4)"{HOME}{5 CRSR D
     Ns}"PI$(7)"{HOME}{9 CRSR D
     Ns}"PI$(1)         :REM*72
177Ø PRINT"{HOME}{1Ø CRSR DNs}"
     PI$(5)"{HOME}{12 CRSR DNs}
     "PI$(6):RETURN     :REM*234
178Ø PRINT"{SHFT CLR}{6 CRSR DN
```

```
s}"PI$(4)"{HOME}{6 CRSR DN
s}"PI$(5)"{HOME}{6 CRSR DN
s}"PI$(6)          :REM*166
179Ø PRINT"{HOME}{8 CRSR DNs}{3
9 COMD Is}"        :REM*231
18ØØ PRINT"{4Ø COMD +s}"
                   :REM*1Ø2
181Ø RETURN        :REM*167
182Ø PRINT"{SHFT CLR}{13 CRSR D
Ns}{COMD 6}"PI$(3):REM*111
183Ø PRINT"{HOME}{6 CRSR DNs}"P
I$(Ø)"{HOME}{7 CRSR DNs}"P
I$(1)"{HOME}{12 CRSR DNs}"
PI$(4)             :REM*224
184Ø PRINT"{HOME}{12 CRSR DNs}{
11 CRSR RTs}{CTRL 3}*{6 CR
SR RTs}*{CRSR RT}*{CTRL 1}
":RETURN           :REM*169
185Ø PRINT"{SHFT CLR}{2 CRSR DN
s}"PI$(Ø)"{HOME}{3 CRSR DN
s}"PI$(7)"{HOME}{7 CRSR DN
s}"PI$(4)          :REM*136
186Ø PRINT"{HOME}{3 CRSR DNs}"P
I$(1)"{HOME}{8 CRSR DNs}"P
I$(6)"{HOME}{6 CRSR DNs}"P
I$(5):RETURN       :REM*156
187Ø PRINT"{SHFT CLR}{6 CRSR DN
s}"                :REM*194
188Ø PRINT"{6 SPACEs}{5 COMD +s
}{12 SPACEs}{4 COMD +s}
                   :REM*7
189Ø PRINT"{5 SPACEs}{6 COMD +s
}{12 SPACEs}{5 COMD +s}
                   :REM*237
19ØØ PRINT"{5 SPACEs}{7 COMD +s
}{1Ø SPACEs}{6 COMD +s}
                   :REM*117
191Ø PRINT"{HOME}{1Ø CRSR DNs}{
CTRL 8}"PI$(3):PRINT"{CTRL
 1}":RETURN        :REM*246
192Ø PRINT"{SHFT CLR}{4 CRSR DN
s}"                :REM*144
193Ø PRINT"{5 SPACEs}{CTRL 3}{1
5 COMD +s}         :REM*175
194Ø PRINT"{5 SPACEs}{15 COMD +
s}                 :REM*234
195Ø PRINT"{5 SPACEs}{6 COMD +s
}{CTRL 8}{2 COMD +s}{CTRL
3}{7 COMD +s}      :REM*211
196Ø PRINT"{5 SPACEs}{6 COMD +s
}{CTRL 8}{2 COMD +s}{CTRL
3}{7 COMD +s}      :REM*217
197Ø PRINT"{5 SPACEs}{6 COMD +s
}{CTRL 8}{2 COMD +s}{CTRL
3}{7 COMD +s}      :REM*199
198Ø PRINT"{HOME}{4 CRSR DNs}"P
I$(Ø)"{HOME}{4 CRSR DNs}"P
I$(7)"{HOME}{9 CRSR DNs}"P
I$(5):RETURN       :REM*38
199Ø PRINT"{SHFT CLR}{4 CRSR DN
s}"                :REM*238
2ØØØ PRINT"{4 SPACEs}{CTRL 3}{2
4 COMD Bs}         :REM*181
2Ø1Ø PRINT"{4 SPACEs}{CTRL 3}{2
4 COMD Rs}         :REM*114
2Ø2Ø PRINT"{4 SPACEs}{CTRL 3}{2
 COMD Es}{CTRL 1}MAIL{19 C
OMD Es}            :REM*192
2Ø3Ø PRINT"{4 SPACEs}{CTRL 3}{3
 COMD Us}{COMD 5}{3 COMD +
s}{CTRL 3}{2 COMD Us}{CTRL
 8}{5 COMD +s}{CTRL 3}{9 C
OMD Us}            :REM*17Ø
2Ø4Ø PRINT"{4 SPACEs}{CTRL 3}{3
 COMD Us}{COMD 5}{3 COMD +
s}{CTRL 3}{2 COMD Us}{CTRL
 8}{5 COMD +s}{CTRL 3}{9 C
OMD Us}            :REM*188
2Ø5Ø PRINT"{4 SPACEs}{CTRL 3}{3
 COMD Us}{COMD 5}{3 COMD +
s}{CTRL 3}{2 COMD Us}{CTRL
 8}{5 COMD +s}{CTRL 3}{9 C
OMD Us}            :REM*134
2Ø6Ø PRINT"{4 SPACEs}{CTRL 3}{8
 COMD Us}{CTRL 8}{5 COMD +
s}{CTRL 3}{1Ø COMD Us}
                   :REM*2Ø2
2Ø7Ø PRINT"{4 SPACEs}{CTRL 3}{8
 COMD Us}{CTRL 8}{5 COMD +
s}{CTRL 3}{1Ø COMD Us}
                   :REM*252
2Ø8Ø PRINT"{4 SPACEs}{CTRL 3}//
//////////////////
                   :REM*96
2Ø9Ø PRINT"{HOME}{6 CRSR DNs}"P
I$(1)"{HOME}{11 CRSR DNs}"
PI$(6)             :REM*224
21ØØ RETURN        :REM*2Ø2
211Ø FORX=ØTO24:POKES5+X,Ø:NEXT
                   :REM*163
212Ø POKES4,128:POKES3,219:POKE
S5+15,28           :REM*1Ø7
213Ø POKEV+4Ø,9:POKEV+28,3:POKE
V+3,125:POKEV+2,175:REM*77
214Ø FORZ=ØTO63:POKE7Ø4+Z,SP(Z)
:NEXT              :REM*28
215Ø POKE2Ø41,11   :REM*146
216Ø POKEV+29,2:POKEV+23,2
                   :REM*38
217Ø POKEV+21,PEEK(V+21)OR2:M=1
:POKES1,15         :REM*5
218Ø FORZ=1TO3:POKES2,131:L=Ø:P
OKE2Ø41,11         :REM*144
219Ø IFM=1THENM=Ø:L=1:FORX=ØTO6
2:POKE7Ø4+X,SP(63+X):NEXT
                   :REM*119
22ØØ IFL=ØTHENM=1:FORX=ØTO62:PO
KE7Ø4+X,SP(X):NEXT:REM*2Ø6
221Ø POKES2,13Ø:NEXT:POKES1,Ø:R
ETURN              :REM*8Ø
222Ø FORX=ØTO24:POKES5+X,Ø:NEXT
                   :REM*48
223Ø M=75          :REM*235
224Ø POKEV+2,M:POKEV+3,12Ø
                   :REM*158
225Ø FORZ=ØTO62:POKE7Ø4+Z,SP(12
6+Z):NEXT          :REM*52
226Ø POKES4,4Ø:POKES3,9:POKES5,
2ØØ:POKE2Ø41,11    :REM*2Ø4
227Ø POKEV+21,PEEK(V+21)OR2
                   :REM*3
228Ø FORX=1TO1Ø:L=Ø:POKES2,129:
POKES1,X:POKEV+2,M+X
                   :REM*24
229Ø FORZ=1TO2ØØ:NEXT:POKES2,12
8:FORZ=1TO1Ø:NEXT  :REM*31
23ØØ NEXT          :REM*119
231Ø POKES2,128    :REM*61
232Ø POKES1,Ø      :REM*14Ø
233Ø RETURN        :REM*161
234Ø FORX=ØTO24:POKES5+X,Ø:NEXT
                   :REM*184
235Ø FORX=15TOØSTEP-1  :REM*191
236Ø POKES1,X:POKES2,129:POKES3
,15:POKES4,4Ø:POKES5,2ØØ
                   :REM*81
237Ø NEXT:POKES2,128:POKES3,Ø
                   :REM*182
238Ø POKE5328Ø,1:POKE53281,1:FO
RZ=1TO1ØØ:NEXT:POKE5328Ø,3
:POKE53281,3       :REM*88
239Ø IFLL=1GOTO42Ø     :REM*234
24ØØ RETURN        :REM*231
241Ø POKE53281,3:POKE5328Ø,3:PR
INT"{SHFT CLR}{CTRL 1}"
                   :REM*2Ø3
242Ø S1=54296:S2=54276:S3=54277
:S4=54273:S5=54272:REM*193
243Ø FORX=ØTO24:POKES5+X,Ø:NEXT
                   :REM*226
244Ø DATAØ,5,Ø,Ø,15,Ø,Ø,21,64,Ø
,15,Ø,Ø,15,Ø,Ø,13,Ø,Ø,1,Ø,
Ø,5,24Ø,Ø,17,24Ø   :REM*162
245Ø DATA2,145,24Ø,Ø,133,192,8,
133,4Ø,34,134,13Ø,4,134,16
,17,44,68          :REM*235
246Ø DATA68,125,1,64,65,17,17,Ø
,68,4,Ø,16,Ø,Ø,Ø,Ø,Ø,Ø
                   :REM*69
247Ø V=53248:FORX=ØTO62:READZ:P
OKE832+X,Z:NEXT    :REM*233
248Ø POKEV+39,2:POKEV+37,6:POKE
V+38,1             :REM*128
249Ø POKEV+23,1:POKEV+28,1:POKE
V+29,1             :REM*4Ø
25ØØ POKEV+16,1:POKEV,65:POKEV+
1,2ØØ              :REM*121
251Ø POKE2Ø4Ø,13       :REM*1
252Ø PRINT"{4 CRSR DNs}{4 CRSR
RTs}S P E C I A L{3 SPACEs
}D E L I V E R Y"  :REM*64
253Ø PRINT"{3 CRSR DNs}{12 CRSR
 RTs}BY C. G. HURLEY"
                   :REM*23Ø
254Ø PRINT"{6 CRSR DNs}{6 CRSR
RTs}{CTRL 9}PLEASE BE PATI
ENT ONE MOMENT{CTRL Ø}"
                   :REM*131
255Ø POKEV+21,1    :REM*66
256Ø POKES4,254:POKES3,8:POKES5
+15,64:POKES1,15   :REM*214
257Ø FORX=64TOØSTEP-4:POKEV,X:P
OKES2,21:FORZ=1TO1ØØ:NEXT:
POKES2,2Ø          :REM*77
258Ø NEXT:POKEV+16,Ø:FORX=254TO
2STEP-4:POKEV,X    :REM*44
259Ø POKES2,21:FORZ=1TO1ØØ:NEXT
:POKES2,2Ø:NEXT    :REM*143
26ØØ POKES1,Ø:POKEV+21,Ø:POKEV+
29,Ø:POKEV+23,Ø    :REM*152
261Ø DIMRM(2Ø),RM$(19,1),TH(11)
,TH$(1Ø,1),D(19,3),OB(2),D
$(3),AV(19)        :REM*224
262Ø DIMW$(43),CD(43),RB(1),NM(
4),AB$(1),C$(1Ø),P$(5Ø),PI
$(7)               :REM*69
263Ø DIM SP(314)   :REM*2Ø2 ►
```

```
264Ø D$(Ø)="N":D$(1)="E":D$(2)=
     "S":D$(3)="W"       :REM*69
265Ø P$="{HOME}{13 CRSR DNs}"
                         :REM*2Ø3
266Ø P1$=P$+"{8 CRSR DNs}"
                         :REM*81
267Ø S$="{38 SPACEs}"   :REM*127
268Ø S1$=P1$+"{2 CRSR DNs}"+S$+
     "{CRSR UP}"         :REM*48
269Ø FORZ=ØTO2:READOB(Z):NEXT
                         :REM*213
27ØØ DATA1Ø19,2Ø17,3318 :REM*94
271Ø FORZ=1TO11:READTH(Z):NEXT
                         :REM*78
272Ø DATA15,12,17,4,18,6,2Ø,19,
     16,9,22             :REM*71
273Ø FORZ=ØTO43:READW$(Z),CD(Z)
     :W$(Z)=W$(Z)+"{5 SPACEs}":
     W$(Z)=LEFT$(W$(Z),5):NEXT
                         :REM*241
274Ø DATABONE,1,BOOBY,5,CLIMB,1
     2Ø,CLOSE,2ØØ,COAT,2,DOG,8,
     DROP,14Ø            :REM*223
275Ø DATAE,111,EAST,111,FEED,21
     Ø,FIGHT,15Ø,FLOWE,9:REM*47
276Ø DATAGATE,3Ø,GET,13Ø,HELP,2
     7Ø,I,25Ø,INVEN,25Ø,JUMP,18
     Ø,KILL,15Ø,KNOCK,17Ø
                         :REM*54
277Ø DATALETTE,11,LILY,1Ø,LOOK,
     24Ø,MAILB,7,MOUSE,4,MUSHR,
     3Ø                  :REM*34
278Ø DATAN,11Ø,NORTH,11Ø,OPEN,1
     9Ø,PAD,1Ø,PORCH,3Ø,PUT,23Ø
     ,QUIT,26Ø           :REM*239
279Ø DATARABBI,3Ø,RAIN,2,ROCK,6
     ,S,112,SAVE,16Ø,SNAKE,3,SO
     UTH,112             :REM*116
28ØØ DATATAKE,13Ø,THROW,22Ø,W,1
     13,WEST,113         :REM*92
281Ø FORZ=ØTO19:FORX=ØTO3:READD
     (Z,X):NEXT:NEXT     :REM*133
282Ø DATA,1,,1,,17,,3,5,2,4,,3,
     ,,,,13,3,7,7,,,,8,5,6,,9,1
     Ø,7,,,,8,,12,,11,8  :REM*47
283Ø DATA1Ø,,,,,,1Ø,,14,,,5,,15
     ,13,,,,,14,17,,,,18,,16,2,
     ,,17,19             :REM*158
284Ø DATA2Ø,18,,,,,19,Ø:REM*136
285Ø T$(Ø,Ø)="YOU SEE AN OLD BO
     NE.":T$(Ø,1)="BONE  :REM*12
286Ø T$(1,Ø)="A RAIN COAT IS NE
     ARBY.":T$(1,1)="RAIN COAT
                         :REM*168
287Ø T$(2,Ø)="A SNAKE HISSES AT
      YOU FROM THE GROUND!"
                         :REM*126
288Ø T$(3,Ø)="A SMALL MOUSE RUN
     S BY.":T$(3,1)="MOUSE
                         :REM*38
289Ø T$(4,Ø)="IT LOOKS LIKE A B
     OOBY-TRAP AHEAD!"   :REM*78
29ØØ T$(5,Ø)="YOU SPY A LARGE R
     OCK.":T$(5,1)="ROCK:REM*27
291Ø T$(6,Ø)="AN OPEN MAILBOX I
     S HERE.":T$(6,1)="MAILBOX
                         :REM*148
292Ø T$(7,Ø)="A HUGE DOG STOMPS
      UP TO YOU!"        :REM*255
293Ø T$(8,Ø)="YOU SEE A LOVELY
     FLOWER":T$(8,1)="FLOWER
                         :REM*174
294Ø T$(9,Ø)="A LILY PAD IS NEA
     RBY.":T$(9,1)="LILY PAD
                         :REM*18Ø
295Ø T$(1Ø,Ø)="HERE IS A SOILED
      LETTER.":T$(1Ø,1)="LETTER
                         :REM*4
296Ø C$(Ø)="THE DOG WON'T LET Y
     OU GO PAST!"        :REM*187
297Ø C$(1)="THE SNAKE HISSES AN
     D BARES YOUR WAY!"  :REM*7
298Ø C$(2)="THE BOOBY TRAP STOP
     S YOU!"             :REM*225
299Ø C$(3)="I DON'T UNDERSTAND.
     ":C$(4)="YOU CAN'T DO THAT
     ."                  :REM*176
3ØØØ C$(5)="WHAT DO YOU MEAN?":
     C$(6)="WHAT DID YOU SAY?":
     C$(7)="WITH WHAT?":REM*237
3Ø1Ø RM$(Ø,Ø)="{CTRL 9}ROAD{CTR
     L Ø}":RM$(1,Ø)="{CTRL 9}1S
     T FORK":RM$(2,Ø)="{CTRL 9}
     2ND FORK            :REM*55
3Ø2Ø RM$(3,Ø)="{CTRL 9}MOSSY GL
     EN":RM$(4,Ø)="{CTRL 9}3RD
     FORK":RM$(5,Ø)="{CTRL 9}RO
     CKY GLEN            :REM*193
3Ø3Ø RM$(6,Ø)="{CTRL 9}4TH FORK
     ":RM$(7,Ø)="{CTRL 9}5TH FO
     RK":RM$(8,Ø)="{CTRL 9}POND
                         :REM*178
3Ø4Ø RM$(9,Ø)="{CTRL 9}6TH FORK
     ":RM$(1Ø,Ø)="{CTRL 9}DEAD
     END":RM$(11,Ø)="{CTRL 9}DE
     EP CAVE             :REM*55
3Ø5Ø RM$(12,Ø)="{CTRL 9}7TH FOR
     K":RM$(13,Ø)="{CTRL 9}EAST
     -SOUTH BEND":RM$(14,Ø)="{C
     TRL 9}ROCK CLIFF    :REM*74
3Ø6Ø RM$(15,Ø)="{CTRL 9}MEADOW"
     :RM$(16,Ø)="{CTRL 9}WEST-N
     ORTH BEND"          :REM*181
3Ø7Ø RM$(17,Ø)="{CTRL 9}WEST-SO
     UTH BEND":RM$(18,Ø)="{CTRL
      9}YARD":RM$(19,Ø)="{CTRL
     9}PORCH             :REM*254
3Ø8Ø RM$(Ø,1)="THE ROAD IS BORD
     ERED BY A TALL FENCE{4 SPA
     CEs}IN FRONT OF TREES.
                         :REM*44
3Ø9Ø RM$(1,1)="YOU ARE ON A NAR
     ROW PATH THROUGH TREES. A
     GATE IS HERE.       :REM*26
31ØØ RM$(2,1)="THE PATH IS VERY
      NARROW HERE AND THE{4 SPA
     CEs}TREES ARE DYING.
                         :REM*58
311Ø RM$(3,1)="THIS SMALL AREA
     IS SURROUNDED BY TALL{3 SP
     ACEs}MOSS-COVERED TREES.
                         :REM*187
312Ø RM$(4,1)="VINES COVER THE
     PATH HERE, MAKING IT{4 SPA
     CEs}HARD TO WALK.  :REM*241
313Ø RM$(5,1)="YOU STAND ON BAR
     E ROCK IN A SMALL AREA{2 S
     PACEs}AMONG GIANT TREES.
                         :REM*111
314Ø RM$(6,1)="IT IS SO DARK HE
     RE AMONG THE TREES THAT YO
     U HAVE TROUBLE SEEING.
                         :REM*195
315Ø RM$(7,1)="THE GROUND IS UN
     EVEN HERE, DIPPING AND{2 S
     PACEs}RISING IRRATICALLY.
                         :REM*15
316Ø RM$(8,1)="A GREEN POND IS
     HERE. THE AIR IS THICK{2 S
     PACEs}WITH THE SMELL OF DE
     CAY.                :REM*13Ø
317Ø RM$(9,1)="THE PATH IS DOTT
     ED WITH MUSHROOMS AND{3 SP
     ACEs}BRIGHT ORANGE MOLD.
                         :REM*22
318Ø RM$(1Ø,1)="THE PATH NARROW
     S AND THE TREES CLOSE IN T
     O BLOCK MOST EXITS.:REM*25
319Ø RM$(11,1)="HERE IS A DEEP
     HOLE IN THE EARTH.{2 SPACE
     s}IT{3 SPACEs}IS BLACK AND
      COLD.              :REM*1Ø7
32ØØ RM$(12,1)="THE GROUND IS R
     ISING AND GETTING VERY{3 S
     PACEs}UNEVEN.       :REM*168
321Ø RM$(13,1)="HERE THE TREES
     ARE STUNTED AND SICKLY.{2
     SPACEs}TALL BUSHES DOMINAT
     E.                  :REM*192
322Ø RM$(14,1)="THE TRAIL ENDS
     IN A STEEP, ROCKY CLIFF. B
     ELOW ARE TREE TOPS.
                         :REM*113
323Ø RM$(15,1)="THE FOREST OPEN
     S INTO A GRASSY MEADOW{3 S
     PACEs}RICH WITH LIFE.
                         :REM*28
324Ø RM$(16,1)="THIS PATH IS SO
      SMALL IS APPEARS TO HAVEB
     EEN MADE BY RABBITS.
                         :REM*236
325Ø RM$(17,1)="THE PATH WIDENS
      HERE AND IS BORDERED{4 SP
     ACEs}BY OLD TREE STUMPS.
                         :REM*235
326Ø RM$(18,1)="HERE IS A CLUTT
     ERED YARD BEFORE AN OLD{2
     SPACEs}CABIN.       :REM*23
327Ø RM$(19,1)="YOU STAND ON TH
     E BROKEN-DOWN PORCH OF{3 S
     PACEs}THE HERMIT'S CABIN.
                         :REM*237
328Ø P$(Ø)="{CTRL 6}{4 CRSR RTs
     }{5 COMD +s}"+CHR$(13)
                         :REM*45
329Ø P$(1)="{CTRL 6}{2 CRSR RTs
     }{7 COMD +s}"+CHR$(13)
                         :REM*52
33ØØ P$(2)="{2 CRSR RTs}{1Ø COM
     D +s}"+CHR$(13)     :REM*56
331Ø P$(3)="{COMD 2}{4 CRSR RTs
     }{2 COMD +s}"+CHR$(13)
                         :REM*1Ø5
332Ø P$(4)= "{4 CRSR RTs}{2 COM
     D +s}"+CHR$(13)     :REM*21Ø
333Ø P$(5)= "{4 CRSR RTs}{2 COM
     D +s}"+CHR$(13)     :REM*228
```

```
334Ø P$(6)="{4 CRSR RTs}{3 COMD
     +s}{CTRL 1}"+CHR$(13)
                          :REM*168
335Ø FORZ=ØTO6:PI$(Ø)=PI$(Ø)+P$
     (Z):NEXT             :REM*19Ø
336Ø P$(7)="{2Ø CRSR RTs}"
                          :REM*17
337Ø P$(8)=P$(7)+"{CTRL 6}{2 CR
     SR RTs}{5 COMD +s}"+CHR$(1
     3)                   :REM*96
338Ø P$(9)=P$(7)+"{CTRL 6}{2 CR
     SR RTs}{7 COMD +s}"+CHR$(1
     3)                   :REM*78
339Ø P$(1Ø)=P$(7)+"{CRSR RT}{1Ø
      COMD +s}"+CHR$(13)
                          :REM*186
34ØØ P$(11)=P$(7)+"{COMD 2}{4 C
     RSR RTs}{2 COMD +s}"+CHR$(
     13)                  :REM*84
341Ø P$(12)=P$(7)+"{4 CRSR RTs}
     {2 COMD +s}"+CHR$(13)
                          :REM*164
342Ø P$(13)=P$(7)+"{3 CRSR RTs}
     {3 COMD +s}"+CHR$(13)
                          :REM*92
343Ø P$(14)=P$(7)+"{2 CRSR RTs}
     {4 COMD +s}{CTRL 1}"+CHR$(
     13)                  :REM*18Ø
344Ø FORZ=8TO14:PI$(1)=PI$(1)+P
     $(Z):NEXT            :REM*16
345Ø P$(15)="{4 CRSR RTs}******
     ***{COMD L}{14 COMD Es}{CO
     MD J}**********"+CHR$(13)
                          :REM*33
346Ø P$(16)="{4 CRSR RTs}******
     ***{COMD L}{14 COMD Is}{CO
     MD G}**********"+CHR$(13)
                          :REM*186
347Ø P$(17)="{4 CRSR RTs}******
     ***{COMD L}{14 COMD Is}{CO
     MD G}**********"+CHR$(13)
                          :REM*181
348Ø P$(18)="{4 CRSR RTs}******
     ***{COMD L}{14 COMD Is}{CO
     MD G}**********"+CHR$(13)
                          :REM*164
349Ø P$(19)="{4 CRSR RTs}******
     ***{COMD L}{14 COMD Is}{CO
     MD G}**********"+CHR$(13)
                          :REM*215
35ØØ FORZ=15TO19:PI$(2)=PI$(2)+
     P$(Z):NEXT           :REM*147
351Ø P$(2Ø)="{14 CRSR RTs}"
                          :REM*54
352Ø P$(21)=P$(2Ø)+"{CTRL 8}{6
     COMD +s}"+CHR$(13):REM*164
353Ø P$(22)=P$(2Ø)+"{2 CRSR RTs
     }{CTRL 8}{9 COMD +s}"+CHR$
     (13)                 :REM*226
354Ø P$(23)=P$(2Ø)+"{CTRL 8}{6
     COMD +s}{2 SPACEs}{3 COMD
     +s}"+CHR$(13)        :REM*18
355Ø P$(24)=P$(2Ø)+"{3 CRSR RTs
     }{CTRL 8}{5 COMD +s}"+CHR$
     (13)                 :REM*41
356Ø P$(25)=P$(2Ø)+"{4 CRSR RTs
     }{CTRL 1}{2 COMD +s}"+CHR$
     (13)                 :REM*49
357Ø P$(26)=P$(2Ø)+"{4 CRSR RTs
     }{3 COMD +s}"+CHR$(13)
                          :REM*246
358Ø P$(27)=P$(2Ø)+"{4 CRSR RTs
     }{5 COMD +s}"+CHR$(13)
                          :REM*6Ø
359Ø FORZ=21TO27:PI$(7)=PI$(7)+
     P$(Z):NEXT           :REM*99
36ØØ P$(28)="{11 CRSR RTs}"
                          :REM*213
361Ø P$(29)=P$(28)+"{11 COMD +s
     }"+CHR$(13)          :REM*32
362Ø P$(3Ø)=P$(28)+"{CRSR RT}{9
      COMD +s}"+CHR$(13)
                          :REM*191
363Ø P$(31)=P$(28)+"{2 CRSR RTs
     }{6 COMD +s}{CTRL 1}"+CHR$
     (13)                 :REM*113
364Ø FORZ=29TO31:PI$(3)=PI$(3)+
     P$(Z):NEXT           :REM*8
365Ø P$(32)="{CTRL 6}{3 CRSR RT
     s}{4 COMD +s}"+CHR$(13)
                          :REM*25Ø
366Ø P$(33)="{2 CRSR RTs}{6 COM
     D +s}"+CHR$(13)      :REM*147
367Ø P$(34)="{CRSR RT}{7 COMD +
     s}"+CHR$(13)         :REM*21Ø
368Ø P$(35)="{8 COMD +s}{CTRL 1
     }"+CHR$(13)          :REM*155
369Ø FORZ=32TO35:PI$(4)=PI$(4)+
     P$(Z):NEXT           :REM*126
37ØØ FORZ=1TO4:P$(35+Z)=P$(28)+
     P$(31+Z):NEXT        :REM*247
371Ø FORZ=36TO39:PI$(5)=PI$(5)+
     P$(Z):NEXT           :REM*2ØØ
372Ø FORZ=1TO4:P$(39+Z)=P$(7)+P
     $(31+Z):NEXT         :REM*19
373Ø FORZ=4ØTO43:PI$(6)=PI$(6)+
     P$(Z):NEXT           :REM*22Ø
374Ø DATAØ,8,Ø,Ø,8,Ø,Ø,8,Ø,Ø,8,
     Ø,Ø,42,Ø,Ø,38,Ø      :REM*1Ø
375Ø DATAØ,17Ø,Ø,Ø,17Ø,Ø,Ø,1Ø,Ø
     ,Ø,42,Ø,14,17Ø,Ø,14,17Ø,Ø
                          :REM*212
376Ø DATA12,17Ø,Ø,Ø,42,128,Ø,42
     ,128,Ø,42,176,Ø,42,176,Ø,4
     2,176                :REM*19
377Ø DATA15,234,128,15,234,Ø,Ø,
     Ø,Ø                  :REM*221
378Ø FORZ=ØTO62:READX:POKE832+Z
     ,X:NEXT              :REM*1Ø8
379Ø DATAØ,Ø,Ø,8,Ø,Ø,8,Ø,Ø,8,Ø,
     Ø,8,Ø,Ø,8,Ø,Ø        :REM*159
38ØØ DATA8,Ø,Ø,8,Ø,Ø,42,Ø,Ø,166
     ,Ø,Ø,42,16Ø,Ø,2,168,Ø
                          :REM*249
381Ø DATA2,17Ø,Ø,2,17Ø,128,2,17
     Ø,16Ø,1Ø,17Ø,168,1Ø,17Ø,16
     8,1Ø,17Ø,171         :REM*147
382Ø DATA48,Ø,171,48,Ø,163,24Ø,
     63,16Ø               :REM*219
383Ø FORZ=ØTO62:READX:POKE896+Z
     ,X:NEXT              :REM*17Ø
384Ø DATAØ,Ø,Ø,Ø,Ø,128,Ø,2,Ø,Ø,
     8,Ø,Ø,32,Ø,Ø,128,Ø :REM*84
385Ø DATA2,Ø,Ø,42,Ø,Ø,166,Ø,Ø,1
     7Ø,Ø,Ø,8,Ø,Ø,1Ø,17Ø,172
                          :REM*2ØØ
386Ø DATA1Ø,17Ø,172,42,17Ø,16Ø,
     128,17Ø,16Ø,32,2,16Ø,12,Ø,
     16Ø,Ø,Ø,32           :REM*239
387Ø DATAØ,Ø,1Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø
                          :REM*142
388Ø FORZ=ØTO62:READX:POKE96Ø+Z
     ,X:NEXT              :REM*241
389Ø DATAØ,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,
     Ø,Ø,12,Ø,Ø,12,Ø      :REM*128
39ØØ DATAØ,12,Ø,2,13Ø,Ø,6,146,Ø
     ,1Ø,16Ø,128,2,128,32,2,128
     ,8                   :REM*63
391Ø DATA2,128,2,2,128,2,2,13Ø,
     13Ø,2,138,162,Ø,17Ø,17Ø,Ø,
     42,16Ø               :REM*8Ø
392Ø DATAØ,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø
                          :REM*93
393Ø FORX=ØTO62:READSP(X):NEXT
                          :REM*17Ø
394Ø DATAØ,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,
     Ø,Ø,Ø,48,Ø,Ø,48       :REM*91
395Ø DATAØ,Ø,48,2,128,32,6,144,
     32,1Ø,16Ø,128,2,128,32,2,1
     28,8                 :REM*162
396Ø DATA2,128,2,2,128,2,2,13Ø,
     13Ø,2,138,162,Ø,17Ø,17Ø,Ø,
     42,16Ø               :REM*166
397Ø DATAØ,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø
                          :REM*139
398Ø FORX=63TO125:READSP(X):NEX
     T                    :REM*117
399Ø FORZ=126TO188:READSP(Z):NE
     XT                   :REM*17Ø
4ØØØ DATA192,Ø,Ø,192,Ø,Ø,192,Ø,
     Ø,192,3,24Ø,192,3,144,192,
     3,176                :REM*134
4Ø1Ø DATA192,3,189,255,255,191,
     255,255,192,255,255,192,25
     5,255,192,255,255,192
                          :REM*173
4Ø2Ø DATA192,Ø,192,192,Ø,192,19
     2,Ø,192              :REM*212
4Ø3Ø DATA192,Ø,192,192,Ø,192,19
     2,Ø,192              :REM*174
4Ø4Ø DATA192,Ø,192,192,Ø,192,Ø,
     Ø,Ø                  :REM*93
4Ø5Ø RM(Ø)=1:PRINT"{SHFT CLR}":
     RETURN               :REM*89
```

■



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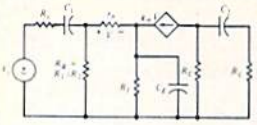

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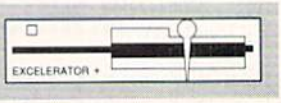

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TYPE IN *RUN*'s CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running. When typing in a program from *RUN*, first load and run *RUN*'s Checksum. The screen will display a SYS number that deactivates and reactivates the Checksum. Always disable *RUN*'s Checksum before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

With this new version, when you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line is correct. If the number that appears *doesn't* match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN*'s Checksum, using the SYS number. Save the finished program.

All the graphics and control characters in the listings in *RUN* have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key. You do *not* type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

{22 SPACEs}—press the space bar 22 times

{SHIFT CLR}—hold down the shift key and press the clr-home key

{2 CRSR DNs}—press the cursor-down key twice

{CTRL 1}—hold down the control key and press the 1 key

{COMD T}—hold down the Commodore logo key and press the T key

{FUNCT 1}—press the F1 key

{5 LB.s}—press the British pound key (*not* #) five times R

Listing 1. *RUN*'s Checksum program.

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(4096)THEN MO=64:SA=4
   9152
30 FOR I=0TO169:READB:CK=CK+B:POKE SA+I,B:NEXT
40 IFCK<>20651 THENPRINT"DATA ERROR!":END
50 POKESA+110,240:POKESA+111,38:POKESA+140,234
60 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
70 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128
   THEN 100
80 POKESA+13,124:POKESA+15,165:POKESA+25,124:PO
   KESA+26,165
90 POKESA+39,20:POKESA+41,21:POKESA+123,205:POK
   ESA+124,189
100 POKESA+4,INT(SA/256):SYS SA:NEW
110 DATA 120,162,24,160,13,173,4,3,201,24,208,4
   ,162,13,160,67,142,4,3,140
120 DATA 5,3,88,96,32,13,67,152,72,169,0,141,0,
   255,133,176,133,180,166,22
130 DATA 164,23,134,167,132,168,170,189,0,2,240
   ,58,201,48,144,7,201,58,176
140 DATA 3,232,208,240,189,0,2,240,42,201,32,20
   8,4,164,180,240,31,201,34
150 DATA 208,6,165,180,73,1,133,180,230,176,164
   ,176,165,167,24,125,0,2,133
160 DATA 167,165,168,105,0,133,168,136,208,239,
   232,208,209,169,42,32,210
170 DATA 255,165,167,69,168,170,169,0,32,50,142
   ,169,32,32,210,255,32,210
180 DATA 255,169,13,32,210,255,104,168,96,104,1
   70,24,32,240,255,104,168
190 DATA 96,56,32,240,255,138,72,152,72,24,162,
   0,160,0,32,240,255,169
200 DATA 42,208,198
```

■

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WHAT IS JULY?—
Picnics, a dip in the pool, ice-cold drinks and parades. Of course, we can't promise you this kind of summer fun, but our July issue will provide excitement. Graphics is the theme, and you'll see why the Commodore's graphics capabilities set it apart from other home computers.

SOFTWARE CONTEST—
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IN ADDITION—
RUN's regular departments and columns provide lots more, including reviews, type-in listings, programming tips and answers to reader questions.

RERUN PREVIEW—
Here's the lineup of programs on the May-June ReRUN disk: **Moving Messages (64)**—Scroll huge text across the screen; **Drip-Drop (64)**—Arcade-type game; **Graphix to the Max (128)**—Display C-64 screens in 80 columns; **Tick-Tock (128)**—40-column analog clock display; **Scratch and Save (64)**—End Save-with-Replace worries; **Form Writer (64/128)**—Create forms of all kinds; **Special Delivery (64)**—Colorful text and graphics adventure game; **Now You See It (64)**—Memory-challenge game; **Unlockup (64)**—No more anguish from computer freeze-ups; **Math Whiz (64/128)**—Math skills game; **Space-Time Machine (64)**—Experience travel at the speed of light.

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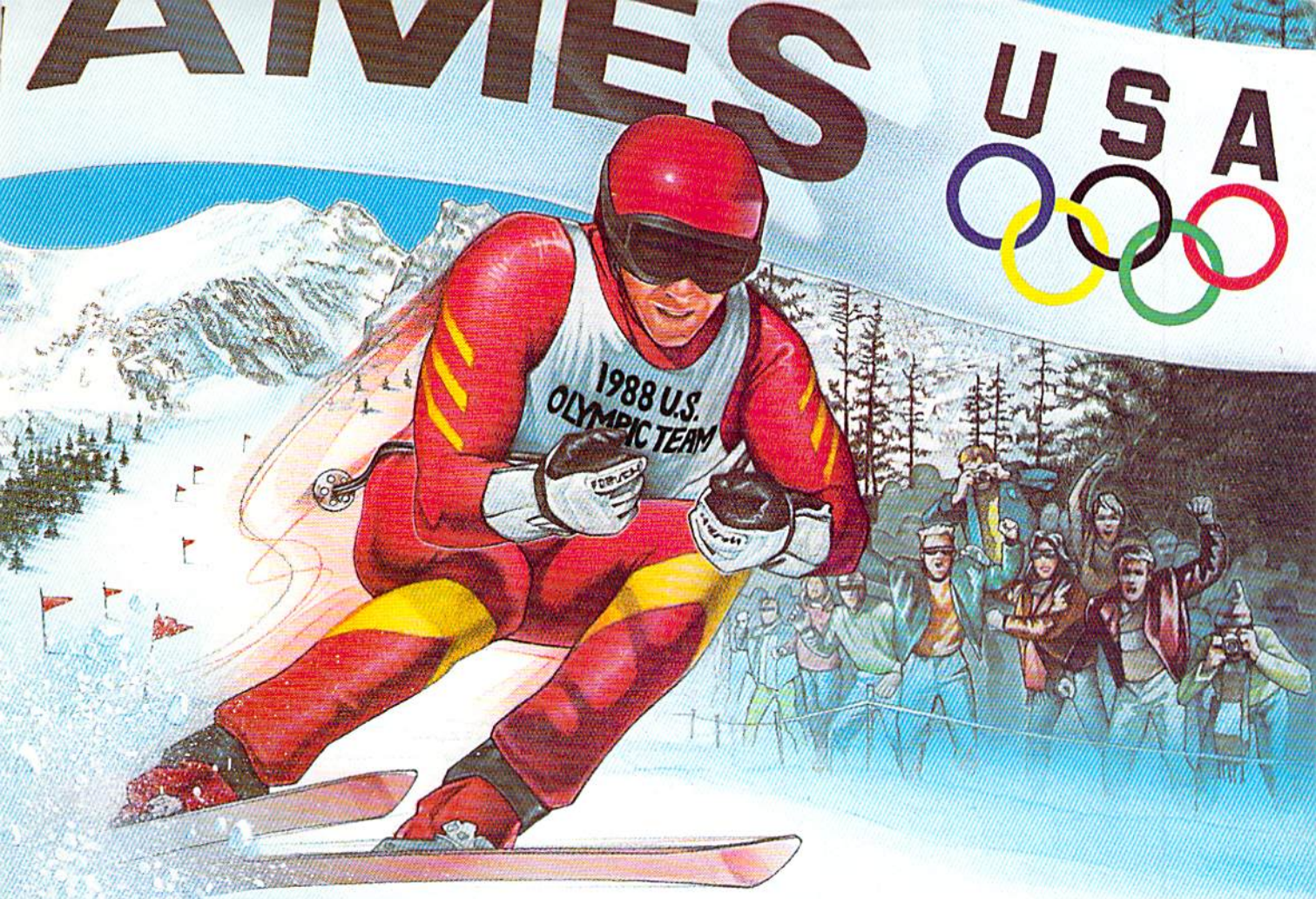


IT'S THE NEXT BEST THING TO SKIING THERE.

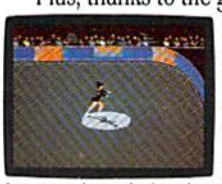
Or figure skating. Or cross-country skiing. Or even luging. In short, *The Games: Winter Edition* is one game that can bring you the thrills and glories of history-making athletic competition. It was designed with the help of former U.S. Olympic Team athletes. *And it's the only computer game to earn an official license from the 1988 U.S. Olympic Team.*

Behold the gates of glory. Now watch 'em whizz by.

Find out what it's like to be a human shock absorber in the Ski Jump. Double your blood pressure shooting down the chute in the Luge. Lean into a 30-mile-an-hour turn in Oval-Track Speed Skating. And then cross your threshold of pain in the Cross-Country event.

There are seven Herculean events in all. For one, two or up to eight players. With graphics so crisp and accurate you'll be tempted to bundle up.

Plus, thanks to the game's unique camera angles, you can view the Downhill and the Ski Jump events from the first-person or camera-angle points-of-view. One moment you're looking over your ski tips. And the next, you're watching your performance from the sidelines.

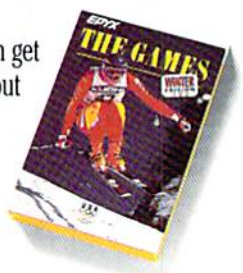


Just you and your shadow about to pull off a double-axle sit-spin.

Switch to the camera-angle point-of-view for a new perspective.

The Games: Winter Edition. Incredible graphics. Network-style camera angles. Excellent athlete control options. And opening and closing ceremonies modeled after those at Calgary.

Now you can get the thrills without the chills.



THE GAMES: WINTER EDITION

BY EPYX

Commodore 64/128. Apple II & compatibles, IBM & compatibles
AUTHORIZED PURSUANT TO 36 U.S.C., SECTION 380

Circle 153 on Reader Service card.

TRI COMPLEX III, the ultimate computer, created by man to help man. Unfortunately man was the only bug in the system...can **you** save mankind?

Exploring underground cave

Search and destroy in your land unit

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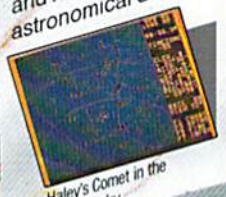
An All Encompassing Astronomy Program

Sky Travel's accurate celestial representations include objects numbering in the thousands, completely flexible viewing of celestial sphere, latest NASA data, skies from 12,000 B.C. to 8,000 A.D. and effects of polar precession and nutation. SKY TRAVEL an astronomical delight!



Haley's Comet in the southern sky

Display of the planets centuries in the past

BlackJack Academy

Everything you ever wanted to know about the game of BlackJack. For the novice learning, or the pro polishing skills, BlackJack Academy offers both high powered instruction and realistic game play. Develop your skills, and have fun playing BlackJack Academy!

Game in play

Split hands

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